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ORIGINAL ARTICLES.

A REVIEW OF SOME OF THE DISPUTED POINTS IN CONNECTION WITH DIPHTHERIA AND CONDITIONS WITH WHICH IT HAS BEEN CONFOUNDED.¹

BY A. C. ABBOTT, M.D.,

OF PHILADELPHIA;

FIRST ASSISTANT LABORATORY OF HYGIENE, UNIVERSITY OF PENNSYLVANIA.

A RETROSPECTIVE view of the confusion of ideas that existed upon diphtheria prior to the discovery of its etiology illustrates how essential to a correct understanding of the manifold phases of a disease is a knowledge of its cause. From the time of Bretonneau to the date of the observations of Klebs and of Loeffler much valuable information was accumulated, but in the state of knowledge in existence at the time it could hardly be estimated at its true value.

It may be of profit to pass in review some of the more important features of the disease, and endeavor to learn in how far opinions expressed by the early observers have been supported or refuted by the results of later methods of investigation.

The first observations that attracted attention to the disease, diphtheria, as we know it, were made in 1826, by Bretonneau, of Tours, who endeavored to extricate from the chaotic mass of ideas existing at the time some definite conception of a malady that had hitherto been loosely classed with a group of gangrenous and necrotic conditions with which it had but little in common, either clinically, anatomically or etiologically. He suggested the use of the term "diphtheritis" for the disease, which was characterized by the presence of a skin-like pellicle upon the mucous membrane of the throat, for the reason that he considered this the feature by which it was distinguishable from all others with which it might be confounded. It may be mentioned at this point that in 1771, Samuel Bard, of New York, in a monograph entitled *An Inquiry into the Nature, Cause and Cure of the Angina Suffocativa, etc.*, gave a description of the clinical and anatomic manifestations of diphtheria that was quite comparable, in its essential details, with that subsequently given by Bretonneau.

Though Bretonneau's teachings constituted a

step in the right direction, and did much to relieve the confused notions upon the malady, it was not long before objections were raised to the grounds taken by him. The teachings of Home, from 1765, to the effect that there existed a disease, designated as croup, and characterized by the formation of pseudo-membranes in the larynx, were revived, and there was thenceforth a division of opinion, some adhering to the teaching of Bretonneau, viz., that all the pseudo-membranous processes in the upper air-passages were identical, while others, with Home, believed in the existence of two distinct affections. With the hope of clearing away doubts and shedding some light upon the disputed point, the question was taken up by the pathologists, and through the labors of Virchow, Weigert, Cohnheim and their pupils, the two processes were subjected to histologic study. The outcome of this work was a classification based entirely upon anatomic grounds and a nomenclature that was used only in its anatomic sense. From this standpoint it was taught that there existed: 1st, a true croupous process, characterized by the deposition of a fibrinous pseudo-membrane upon the surface of the mucous membrane; 2d, that there existed a true diphtheria, similarly characterized by the local appearance of a fibrinous condition, which was not, however, confined to the surface of the mucous membrane, but extended into it; and 3d, that there existed a mixed anatomic condition known as diphtheric croup, in which there appeared both the superficial pseudo-membranous deposit and the involvement of the deeper underlying structures; this latter being the local condition commonly seen in true diphtheria. The entire process in all cases was seen to be a coagulation-necrosis, the direct effect of the causative irritant, a process characterized by a combination of cell-death and inflammation, the coagulation and fibrin-formation resulting from the contact between the inflammatory serous exudate and the fibrin-ferment supplied by the dead cells.

While this is the anatomic nature of the local process in diphtheria, and constitutes the condition known as diphtheric, it is, nevertheless, one that occurs as a result of the action of many irritating agents; and, while always present as the local manifestation of diphtheria, it is often seen in other parts of the body than the throat, and in conditions that are etiologically distinct from diphtheria.

It is easy to see, therefore, that the use of the

¹ Read at the meeting of the Pathological Society of Philadelphia, held Nov. 8, 1894.

terms diphtheric and croupous in their anatomic sense, regardless of the causes underlying them, may, and doubtless often does, give rise to confusion. Though of the utmost importance in elucidating the nature of the tissue-changes seen locally in laryngeal and pharyngeal pseudo-membranous inflammations, these observations afforded but little aid to the clinician in recognizing the nature of the various exudates *intra vitam*. He was still obliged to rely, as hitherto, upon the symptoms and the naked-eye appearances of the exudations; and it was then, as now, the experience of every clinician that these features of the disease are far too variable to admit of a positive diagnosis in all cases.

The means afforded for the correct diagnosis of the nature of these conditions constitute the first and most important outcome of the discovery of the cause of diphtheria. With the demonstrations by Loeffler, that there existed in the diphtheric deposits in the throats of all persons sick of diphtheria a distinct species of microorganism that was not present in other anatomically similar exudates, that the organism could readily be recognized, isolated and cultivated, and that it possessed the power, when introduced into susceptible animals, of reproducing conditions anatomically identical with those occurring in man afflicted with the disease, grounds for confusion could no longer exist, and from that time the question has been not so much with regard to the anatomic character of the local pathologic changes as to the presence or absence of the specific causative factor. If this agent is present, diphtheria exists; if it is absent, then the local conditions and constitutional manifestations must be attributed to some other cause, and the disease is not diphtheria.

Thus it soon became manifest that the dispute over the relation between diphtheria and so-called membranous croup was to be incontestably settled. By the bacteriologic and histologic study of the latter condition it has been found to be due to the activities of the same microorganism that is concerned in the production of diphtheria, and to present fundamentally the same histologic conditions that are found in the diphtheric exudate. I am aware that there are still individuals who adhere to the opinion that true, specific, fibrinous laryngitis occasionally occurs spontaneously; but, unfortunately for this view, it is usually supported by clinical evidence alone, and has rarely, if ever, been formulated from the results of bacteriologic study of the cases.

Still another local process characterized by fibrinous exudation has been shown by bacteriologic analysis to be etiologically identical with diphtheria. I refer to the affection of the mucous membrane of the nostrils known as membranous rhinitis, a condition that receives but little attention because of the mildness of its clinical course, but which, neverthe-

less, depends for its existence upon the activities of the same organism that is concerned in producing diphtheria. Because of their apparently innocent nature these cases are not considered as menacing to the health of individuals with whom they come in contact, and are not, therefore, isolated or otherwise regarded as dangerous, and yet examples are not wanting to show that they are communicable from one person to another, and there is some evidence to prove that true diphtheria has been contracted from them.

Another important question upon which there has been a conspicuous divergence of opinion, and which was also answerable only through the light shed by modern methods of research, is as to the local or constitutional origin of diphtheria. The careful study of an enormous number of cases occurring in man, and produced experimentally in animals, has demonstrated that the disease is purely local in its origin, and that the pseudo-membranous processes in the throat, the secondary manifestations in the internal organs, and the clinical symptoms, are one and all the result of a soluble poison, produced by a microorganism that has its seat of primary invasion in the mucous membrane of the upper air-passages. It is important to note that the disease is not a septicemia, in the sense of being associated with a distribution throughout the body of the microorganisms causing it, but is strictly a toxemia primarily, though a septic condition may be engrafted upon the toxic one later in its course.

Even the tissues in the throat in which the diphtheria-bacilli are growing give evidence of the effect of the poison independently of the immediate presence of the bacteria by which it was produced. In sections through the pseudo-membranes one sees that the most superficial layers contain bacteria in large numbers, among which the bacillus diphtheriae can easily be recognized by its peculiar morphology; beneath this one sees a feebly-stained layer rich in cells but containing little or no fibrin, and in this layer the Klebs-Loeffler bacillus is often the only organism present; and especially is this the case just above the still deeper densely-stained fibrin-layer. The layer next to the mucous membrane is rich in fibrin, but contains no bacilli, and as a rule, no bacilli are found in the underlying necrotic mucous membrane.

The Klebs-Loeffler bacilli, we see, not only do not invade the infected mucous membrane, but do not usually even penetrate through the entire thickness of the diphtheric pseudo-membrane. The picture presented suggests a conflict at long range, so to speak, the invaders being the bacteria whose weapons are the easily soluble poisons manufactured by them upon the surface of the affected part, and through the absorption of which the tissues undergo

the peculiar metamorphosis seen in this disease. If our bacteriologic investigations are conducted further into the remote internal organs, there too, we find an absence of the specific microorganisms. This is true not only for the internal viscera generally, but likewise for those organs affected with the peculiar form of localized necrosis described by Oertel as so common in this malady.

It is not, however, unlikely that during the course of the disease a few scattered organisms may accidentally gain access to either the lymphatic or vascular circulation, and thus become deposited in remote organs, as they may also be carried thither through the phagocytic activities of wandering leukocytes. The possibility of finding diphtheria-bacilli in the internal organs at autopsies upon individuals dead of the disease has recently been demonstrated by Frosch, Wright, and others; but nothing that we have learned from the study of the conditions occurring in the deeper tissues leads to the belief that they are in any way dependent upon the immediate presence of the specific bacilli.

The poisons produced by the bacilli at the seat of primary invasion, to the absorption of which, as has been said, the secondary manifestations and constitutional symptoms are due, are likewise produced by the bacilli when growing under artificial conditions of cultivation.

When isolated, free from the organisms by which it was manufactured, it is seen to be capable of causing in susceptible animals identically the same group of tissues-changes that are produced when the bacilli themselves are introduced. The interesting and important features in connection with it are its nature, being analogous chemically to the venom of serpents, and the potency of its poisonous properties, which exceeds in degree that of almost any other substance with which we are acquainted. Roux and Versin present some idea of the intensity of its action; they have estimated that 0.4 milligram of the dried poison is sufficient to kill eight guinea-pigs weighing each 400 grams, or two rabbits weighing each two kilograms, a degree of toxicity almost beyond the grasp of our imagination.

In 1888 Oertel directed attention to a group of pathologic conditions that he found in the internal organs of individuals dead of diphtheria; and more recently this subject has attracted additional attention through similar observations made by Welch and Flexner upon animals that had died of the experimental form of the disease. These changes consist of foci of a peculiar form of necrosis, varying in extent and scattered irregularly through the internal organs. They are characterized by nuclear fragmentation of the cells of the parts affected. The fragments into which the nuclei are seen to disintegrate are conspicuous for the readiness and intensity with which

they become stained and for the manifold shapes which they are seen to assume, at times appearing as little else than dust-like particles strewn through the necrotic and hyaline area, or again as clusters of granules indicative of the location of the nucleus from which they originated; again, all manner of irregular and bizarre shapes that may be likened to whetstones, crescents, balloons, clubs, dumb-bells, etc., will be seen. Frequently a nucleus will appear as if drawn out so that it may present a tail-like elongation, and again it may be pinched and distorted. In certain spots there may be almost an absence of stained cells and fragments, but it is usually possible to detect faint outlines of cells and more or less of a refractive, granular substance that gives the staining reaction of fibrin. In the investigations of Oertel and of Welch and Flexner these necrotic areas in greater or less extent have been detected in all the internal viscera, being particularly prominent in the lymphatic apparatus, in the liver, and in the spleen. To a limited extent the same process was also detected in the muscles of the heart. While not strictly confined to the disease, diphtheria, this nuclear fragmentation is nevertheless always an accompaniment, and affords, by the rapidity with which it is produced, another illustration of the energy of action possessed by the poison producing it. It has been seen to occur in the internal organs of animals with all its characteristics in so short a time as thirty-eight hours after inoculation with small quantities of cultures of the bacillus diphtheriae.

Through similar methods of investigation a satisfactory understanding of the pseudo-membranous anginas of scarlatina and measles has also been reached. These processes are not, as has been supposed, of a diphtheric nature, etiologically speaking, though it is often impossible to distinguish them from diphtheria by the means ordinarily possessed by the clinician. When not complicated with diphtheria the local manifestations in these diseases are etiologically quite distinct. They are due, as a rule, to a streptococcus similar to and probably identical with that concerned in the production of erysipelas and phlegmonous forms of inflammation. A clearer understanding of the pathology of these conditions has recently been reached through the studies of Booker, who states that from the material examined it is safe to say that the local changes seen in the throats of patients with scarlet fever and measles are anatomically distinct from those seen in diphtheria, and that the anatomic alterations observed in the deeper structures of the body resulting from the scarlatinal virus, unlike those secondary to diphtheria, are accompanied by the immediate presence of streptococci, and are largely suppurative in nature, appearing to be the direct outcome of the organisms associated with them.

From this imperfect review of the more important of the mooted questions in connection with diphtheria and allied pseudo-membranous inflammations of the upper air-passages, it is manifest that such doubts could only have existed as a result of incomplete acquaintance with the causes underlying the several processes; and with the exact means of differentiation that have been afforded by newer methods of investigation our conception of the nature of these processes, particularly of diphtheria, occupies a place on a par with that of tuberculosis, anthrax, and other infectious maladies from which so much of value has been learned. The discovery of the bacillus diphtheriæ and the practical application of the knowledge gained by this discovery has shed a flood of light upon these processes that could not possibly have been obtained through any other channel of study.

As bacteriologic study of diphtheria and conditions with which it might be confused met with wider application certain irregularities were encountered. It was discovered that the causative factor, the genuine bacillus diphtheriæ, was simulated in morphologic and biologic peculiarities by what was believed to be another organism which was distinguishable from it only by the absence of pathogenic properties. This latter organism was known as the pseudo-diphtheric bacillus, and was considered as distinct from the genuine diphtheric bacillus simply because of its inability to kill susceptible animals when inoculated into them subcutaneously. As this organism had been seen in conditions not believed to be diphtheria, as it had been seen in mild cases of a doubtful nature, and as it had been seen in genuine diphtheria in association with the true diphtheria-bacillus, it became necessary to determine its relation to the virulent bacillus diphtheriæ before the value of the latter organism as an absolute means of diagnosis could be firmly established. The simplest way out of the difficulty was to consider them as in no way related, but as entirely distinct species, and this, in fact, is what was done.

It was, however, soon observed that the genuine, virulent diphtheria-bacillus was liable to fluctuate in the degree of its pathogenic properties, at times possessing these to such an extent that when inoculated into guinea-pigs death resulted in from thirty-six to forty-eight hours, while again the period of inoculation was much longer, often reaching five and six days, and in not a few cases organisms were obtained from undoubted cases of diphtheria that failed to give more than a temporary local reaction when inoculated into these animals. In many cases of diphtheria the two organisms have been seen to be simultaneously present, and in the observations of Roux and Yersin it was detected that as the dis-

ease advanced toward recovery the number of the less virulent and non-virulent forms became more numerous in proportion. Singular as it may seem, the only, or principal point of distinction between these two organisms, if distinct they are, was held to be the ability of the one and the inability of the other to cause the death of the inoculated animals, and no attention whatever was paid to the nature of the local reaction that was caused by the organism that failed to kill. I have taken occasion to examine the condition of the tissues at the seat of inoculation in animals into which non-virulent forms of this organism had been introduced, and have found that, though the death of the animals did not follow the inoculations, locally, tissue-changes indistinguishable, save in degree, from those produced by the fully virulent forms were to be found; there was the same edema, though less in extent, the same hyaline condition of the muscle-fibers, the same fibrin-exudation and the same characteristic fragmentation of nuclei that one finds locally in the animals inoculated with the true, fully-virulent bacillus of diphtheria. This, I think, offers another argument in favor of the opinion already expressed elsewhere by Roux and Yersin, myself and others, that the diphtheric bacillus and the so-called pseudo-diphtheric bacillus are one and the same organism, the latter representing the former, whose virulent properties have become diminished.

It must not be inferred, from what has been said in regard to the gradual appearance of the attenuated forms of this organism with the establishment of convalescence, that when recovery is complete, the organisms are no longer virulent. Such a conception would not accord with the results of observations upon convalescents from diphtheria. The study of a large number of cases has demonstrated that with recovery many of the diphtheric bacilli in the throat not only do not lose their virulence and vitality, but retain both these properties for days and weeks, and it is often possible to isolate from the throats of convalescents from diphtheria virulent diphtheria-bacilli for as long as two and three weeks after all traces of the disease have disappeared, a point of inestimable importance in establishing rational prophylactic measures against the spread of the malady.

It is interesting that it is not always possible to establish a dependence between the clinical course of the disease and the degree of virulence possessed by the organisms causing it. From many of the most alarming cases organisms are often isolated that are much less virulent, as determined by their period of incubation in animals, than those seen in other cases, the clinical manifestations of which are much milder. There are undoubtedly modifying conditions at play, upon whose nature we can do

little more than speculate—conditions, possibly, of individual susceptibility or tolerance to the action of the poison, or some local factor favors or retards the absorption of the poison from the point at which it is produced; certain it is that in its clinical, anatomic, and certain of its bacteriologic phases, diphtheria varies within very wide limits, but possesses at the same time certain features that serve to distinguish it from other diseases with which it is likely to be confounded.

With the further application of bacteriologic methods to the study of diphtheria, attention was turned to the question of immunity against the disease, and finally to the discovery of a cure.

The outcome of experiments conducted principally by Behring, Kitasato, Wernicke, Wassermann, Brieger, Ehrlich, Roux, Martin, and others, is to apply to diphtheria the principles of the important observations made by Behring and Kitasato upon tetanus, to the effect that the blood-serum of animals that have been immunified against tetanus possesses not only the power of conferring immunity against this disease to animals into which it may be injected, but that it also possesses the property of arresting the malady after it is already in progress. This observation represents the foundation-work of blood-serum therapeutics, around which so much interest has lately centered.

Through the combined labors of those cited, and more especially through the investigations of Behring, it has been found possible to do in diphtheria just what he and Kitasato did in tetanus, viz., it is possible to render susceptible animals immune to diphtheria by the introduction into their tissues of the modified poisons produced by virulent diphtheria-bacilli, and to obtain from the blood of these animals serum that will not only afford immunity to other susceptible animals, but which, as in the case of tetanus, has the power of arresting the disease after it has already been in progress for a time. When this method of treatment is applied to animals that have purposely been infected with pure cultures of the bacillus diphtheriæ, and not too long after infection, the results are so uniformly favorable as to place the operation far beyond the experimental stage. If, however, the disease is permitted to proceed for a time the results are not to be counted upon with such certainty; in short, the success of the operation is dependent upon the stage to which the disease has progressed. In mixed infections, that is, those in which some other organisms, especially the streptococcus, commonly associated with the bacillus diphtheriæ in human diphtheria are present, the experiments of Roux and Martin indicate that the results of the treatment are still less certainly favorable.

You are all too well acquainted with the astonish-

ingly favorable statistics that have been presented recently for hospitals in which this method of treatment has been employed, to require mention of the reduction in the death-rate from diphtheria since the use of this method, and I believe it safe to predict that as our knowledge upon the subject increases, and as we become more familiar with some of the obscure points the results of the treatment will be still more favorable.

As to the *modus operandi* of the immunifying process and the therapeutic action of the serum of the immunified animals, we are still in the dark; but the hypothesis of Buchner, to the effect that the introduction into susceptible animals of the modified poisons produced by virulent bacteria serves as a stimulus to the integral cells of the tissues, and awakens a reactionary change that results in the appearance in the circulating blood of a something that is highly antagonistic to the fully toxic poisons that may subsequently gain access to these animals, seems most reasonable, and at present meets the requirements of the case more satisfactorily than any of the other explanations that have been advanced.

A PLEA FOR A METHODICALLY-WRITTEN TEXT-BOOK ON ANATOMY.¹

BY EDMOND SOUCHON, M.D.,

PROFESSOR OF ANATOMY AND CLINICAL SURGERY, TULANE UNIVERSITY, NEW ORLEANS, LA.

It is my belief that students of anatomy would better learn and remember the innumerable and more or less complicated facts of anatomy if they had at their disposal a text-book written with constant uniformity and rigorous method. The guide or course followed in describing the organs should be inexorably systematic and always the same for each and every one of the organs, and should apply as well to the largest organs as to the smallest, even to a cell. It might be dry and monotonous reading for the cursory reader or for office-reading, but it would be of the greatest assistance to those who have to learn and to remember.

It is true that all text-books on anatomy have about the same main divisions or headings in describing an organ, but it is specially in the details and smaller things under those headings that the students need systematic and uniform assistance. All superfluous words, remarks and dissertations were better omitted, so as to leave the facts as simple and prominent as possible; but the guide does not interfere with extensive descriptions.

Students of ordinary intelligence can readily supply in their own minds connecting words, and even sentences. Thus such ponderous books as we now

¹ Read at the meeting of the Association of American Anatomists, at Washington, D. C., May 29, 1894.

see carried around by students would be reduced one-third or one-half.

I have elaborated such a guide, and I here present it for consideration to the members of the association. Of course, the guide or course describing an organ should be followed more or less closely according to the importance of the organ or of the facts connected with it. If some facts connected with one particular part of an organ are of no importance, they should be skipped, and stress should be laid upon those facts only which present a practical bearing or a scientific interest.

It would be essential to follow the guide systematically, as one fact is so intimately connected with the following one that the place where to say it cannot very well be altered without disturbing the harmony of the whole. There is a place for everything, and everything should be in its place. We should say at the beginning what belongs there, and not say it in the middle of the description. Again, we must say in the middle of it what belongs there, and not say it at the end.

It may seem difficult and complicated at first, but after one has committed the guide thoroughly to memory, so as to have it at the tongue's end without hesitating to think, it will be seen how smoothly it works, and how much it will assist. It is impossible to forget or skip anything, as every few words almost in the guide call for an answer at its proper place, which answer is easily remembered by one who has studied the organ two or three times with this severe system and training.

In describing an organ we should give: 1st. Definition of the organ, its synonymy and etymology; 2d. Divide the organ into separate parts, if necessary; 3d. State the number; 4th. The dimensions; 5th. The situation; 6th. The direction; 7th. The means of fixity; 8th. The mobility; 9th. The shape; 10th. The surfaces, borders, angles, or extremities, as base and apex; 11th. The structure.

To avoid repetition the definition should be based upon the function of the organ.

If the organ is a complex one, such as are sphenoid and temporal bones, it is important to divide it into several parts, describing each part as a separate organ.

In connection with the number, it should be stated whether the organ under description is single or double, and whether there are not sometimes supernumerary organs, such as the spleen, of which in some instances there may be one, two, or three supernumerary organs; also, whether in cases of double organs they are known to unite sometimes to form but one, such as is the case occasionally with the two kidneys, which unite by their extremities to form the so-called "horse-shoe kidney."

We must say, also, if the organ is ever known to be absent altogether.

The dimensions of the organ should be described, either by comparing the organ to some familiarly known object or to some other organ of the human body (this is the relative dimension), or by actual measurement in inches or fractions (these are the absolute dimensions of the organ). When the organ is a hollow tube or a channel one should give the dimensions of its caliber or bore.

The situation should be first stated in a general way, or in regard to the region it occupies; then its relative position should be mentioned, that is, the position it occupies in regard to the surrounding organs; thus, for the spleen, we say it is situated in the left hypochondrium, below the diaphragm, above the kidney, behind the stomach, etc.

The direction of an organ should be stated first as compared with the axis of the body, and then as compared with its own axis; thus, the fibula is vertically directed as compared with the axis of the body, and is twisted as regards its own axis.

The means of fixity of organs are either connections by adhesions through more or less loose or tough connective tissue, or ligaments formed of folds of the membranes enclosing them, or by vessels, or they are supported by organs situated beneath; thus, the liver has ligaments formed by the peritoneum; its upper border is closely adherent to the diaphragm by rather tough connective tissue; it is partially held in position by the hepatic veins passing from its substance to the ascending cava, and it is supported as on a soft cushion by the stomach and intestines.

The mobility of an organ affects the whole organ or a part of it only; thus, the head and part of the body of the pancreas are firmly bound down, whereas the tail is more or less movable. The organ may be movable by itself, as are the intestines, or its motion is communicated by another organ, such as the motion communicated from the diaphragm to the liver. Finally, it should be stated whether at times the mobility does not become excessive without interfering with the functions; thus, the kidney will sometimes escape more or less from its bed of areolar and adipose tissue, and, without impairing its usefulness, float about in the abdomen.

The shape of the organ should be next considered. It is very important to define it accurately, either by comparing it to a geometric figure, or by comparing it to the shape of a familiarly-known thing, because, according to its shape, an organ presents more or less surfaces, borders, angles, or extremities, or a base and an apex.

In describing each surface we should mention the other names by which it is known, also its ex-

tent, whether it is large or small; also its direction, whether it is directed forward or backward, above or below, or in an intermediate direction; also the form or shape of that surface, whether it is plane or concave or convex, either in the vertical or the horizontal direction, and if it is or is not the same all over the surface; also its peculiarities, which are represented either by projections (folds, processes, tubercles, protuberances, ridges, or crests) or by depressions (orifices, blind foramina, grooves, canals). When enumerating numerous peculiarities we should invariably begin on the median line and then on the sides, proceeding always from before backward, and from above downward, and from within outward.

In describing a groove we should say if it leads or not to a canal, its depth and the organs contained therein, artery, vein, nerve, or a membranous process, or a special organ. In mentioning an orifice we should describe its size, shape, boundaries, structure, and contents. Finally, we should give the relations of the surface, which may be with skin (*i. e.*, what part of the surface of the body its course corresponds to); or with bones, joints, muscles, viscera, vessels, nerves. The same course is to be followed in describing a border; first, give its other names; then its extent, then its shape; say if it is blunt or sharp, or bevelled at the expense of one surface or the other.

All thick borders should be divided into two edges or lips, and an intermediate interstice, giving the peculiarities and relations of each, then its relative direction, whether vertical, horizontal, oblique, forward or backward, above or below, inward or outward; afterward, its absolute direction, rectilinear or sinuous, concave or convex; next mention its peculiarities and its relations, following the same course as for a surface. The same course applies to the description of the angles of the organ, or to its extremities, or to the base and apex, if it should have any.

It is now the time to describe the structure of the organ. This should always be preceded by mention of its color and its consistency, as these properties are connected with the structure. In speaking of its consistency we must say whether the organ is soft or hard, friable or not, elastic, dilatable, or retractile. As regards the structure we should first describe the envelopes; a great many organs and most viscera are provided with a serous coat, reduced to its endothelial layer. Next comes a fibrous or fibro-elastic and muscular coat, bearing or not a special name or several names, varying in thickness and resistance, more or less elastic, presenting an external surface more or less elastic, and more or less closely connected with the surrounding tissues and organs; an internal surface more or less

intimately connected with the proper tissue or substance of the organ, and sending into this proper tissue filaments or processes that divide the interior of the organ into a large number of alveoles, in which are deposited the proper or characteristic anatomic elements of the organ. Almost always the fibrous coat is reflected at the point called the hilum into the interior of the organ, and then divides into smaller and smaller processes, which join those given off from the inner surface, and assist in forming the alveoles. The whole of these processes and the alveoles which they form constitute what is called the stroma or fibrous skeleton of the organ, which supports the more delicate elements of the proper substance. This stroma is more or less apparent, according to the organ; it is, like the fibrous coat, formed of more or less dense connective tissue, to which is often added elastic fibers and smooth muscular fibers in greater or lesser quantity. The proper substance of many organs is divided into an external or cortical substance and into an internal or medullary.

The proper or characteristic elements of an organ are either cells or fibers, tubes, or prisms, arranged in a peculiar manner according to the organ, to which are added capillary arteries, veins, and lymphatics, and nervous filaments. The capillaries in many organs present a most interesting and often characteristic arrangement. If the organ described is a gland with an excretory duct, that duct should be described as a separate organ. If the organ is a hollow one, like the stomach or the heart, we should describe the interior with its lining membrane. We should mention with care the consistency of the membrane, its thickness, its elasticity, degree of adhesion of its deep surface, and in regard to its free surface, its color, its peculiarities, the nature of its epithelium, and, if any, the kind of glands which it contains. Some organs present a peculiarly interesting chemic composition which should be mentioned. Usually the point of interest lies in the relative amounts of the higher organic and the lesser organic elements.

To be thorough the mode of development of the organ should now be given, and the changes that it undergoes from its embryonic formation to the very oldest age.

Finally, in a last paragraph, we should mention the peculiarities and varieties of the organ, due to sex, habits, trades, constitutions, individualities, nationalities, and races.

The same course is applicable to bones, ligaments, vessels, and nerves, although it may seem odd at first, since it is quite a departure from the old plan. It would be a waste of time before such an audience to give any example by actually describing a muscle or a nerve after this plan.

All the foregoing points and details are summarized in the following table :

GUIDE TO DESCRIBE AN ORGAN (*applicable to all organs*).

1. Definition.
Synonymy, etymology, history.
2. Division of a complicated organ into separate portions and description of each portion as a separate organ.
3. Number.
Single or double.
Supernumerary organs.
Absence of the organ.
4. Dimensions.
 1. Relative size, or size compared to other organs or to familiar objects.
 2. Absolute size.
Diameter, transverse, vertical, antero-posterior; caliber.
5. Situation.
 1. General situation or region it occupies.
 2. Relative situation, as compared to the surrounding organs.
6. Direction.
 1. Compared with axis of body.
 2. Compared with its own axis.
7. Means of fixity.
Adhesions.
Ligaments.
Vascular connections.
Supported by other organs.
8. Mobility.
Of the whole organ.
Of a part of it.
Intrinsic mobility.
Extrinsic mobility, or communicated by other organs.
Extent of mobility.
Exceptional mobility.
9. Shape.
Compared to a geometric figure.
Compared to the shape of a familiarly-known object.
10. Surfaces.
Synonymy.
Direction: Forward or backward.
Above or below.
Intermediate direction.
Shape: Plane, concave, or convex.
Vertical or transverse direction.
Peculiarities.
Projections: folds, processes, ridges, or crests, tubercles, protuberances.
Depressions: orifices (size, shape, boundaries, structure, contents), blind foramina; grooves and canals (depth, extent, contents, vessels, nerves, or organs).
When enumerating peculiarities begin on the median line, and then on the sides; proceed from before backward, from within outward, or from above downward.

Relations: With skin (*i. e.*, to what part of the surface it corresponds) or
With bones, joints.
Muscles.
Viscera.
Vessels and nerves.

11. Borders.
Synonymy.
Dimensions.
Direction.
 1. Relative direction: vertical, horizontal, oblique, forward, or backward, above or below, inward or outward.
 2. Absolute direction: straight, sinuous, concave, convex.
Shape: Blunt or sharp, or bevelled at the expense of one surface or the other.
Peculiarities, as for surfaces.
Relations, as for surfaces.
All thick borders ought to be subdivided into two edges or lips, and an interstice. Give for each, peculiarities, insertions, and relations.
12. Angles or extremities: same as borders.
Base and apex: same also.
13. Structure.
Color.
Consistency: density, friability, elasticity, contractility.
Envelops or coats: thickness, resistance, elasticity.
External surface, relations, adhesions.
Internal surface, relations, adhesions, processes from internal surface. Reflections into the interior of the organ.
Stroma: If delicate or apparent, is composed of connective tissue, or elastic, smooth, muscular fibers.
Proper or characteristic elements.
Cells, fibers, tubes, prisms.
Capillary arteries, veins, lymphatics, nerves.
Excretory duct of glands (as a separate organ).
Lining membrane of a hollow organ.
Thickness, consistency, elasticity, adherent surface (degree of adhesion).
Free surface: Color, peculiarities, epithelium, glands.
14. Chemic composition.
Organic and inorganic elements.
15. Development of the ages.
16. Peculiarities or varieties, or anomalies due to sex, habits, trades, constitution, individualities, nationalities, races.

Meningitis due to the Bacillus of Typhoid Fever.—DADDI (*Sperimentale*, juillet, 1894; *Revue Internat. de Méd. et de Chir. Prat.*, No. 18, p. 335) has reported the case of a boy, nine years old, who in the course of an attack of typhoid fever was seized with symptoms of meningitis, to which he succumbed. In the creamy exudate covering the upper surface of the brain and cerebellum, as well as in two small abscesses situated symmetrically at the level of the spines of the scapulæ on either side, the bacillus of typhoid fever was found in pure culture.

CLINICAL MEMORANDA.

OPERATIVE TREATMENT FOR THE CURE OF VASCULAR NEVI.¹

BY A. F. JONAS, M.D.,

OF OMAHA, NEBRASKA;

PROFESSOR OF CLINICAL SURGERY IN THE OMAHA MEDICAL COLLEGE;
SURGEON TO THE METHODIST EPISCOPAL, PRESBYTERIAN, AND
DOUGLAS COUNTY HOSPITALS; PRESIDENT OF THE MISSOURI
VALLEY MEDICAL SOCIETY, ETC., ETC.

I DESIRE to make a preliminary report of a case of vascular nevus of the face, in which we have instituted operative measures for the cure of a condition that, while not painful, is annoying alike to the possessor and to the immediate friends. To be afflicted with a vascular growth, in the form of a telangiectasis, *naevus flammeus*, or *angioma simplex*, involving nearly one side of the face, means almost social ostracism. It is a source of constant mortification. The individual often becomes reticent, and avoids social intercourse because he is avoided by others. He prefers almost any other deformity to this; his mental suffering is intense, and he will submit to almost any form of treatment, however painful or prolonged, that he may be rid of what he almost considers a moral stigma. If the treatment fails his despondency increases; he feels himself a branded outcast. It seems strange that a deformity which in no way interferes with functional activity should usually so unfit the individual for the ordinary enjoyment of life. No amount of reason or moral suasion will give him peace of mind; nothing short of such physical means as will remove the hideous blemish.

One who has seen many of these cases and has been called upon to treat them will testify how difficult it is to achieve results satisfactory alike to his patient and to himself. The time-worn methods of caustics in their varied forms, while they frequently destroy the cutaneous vascularity, thereby removing the annoying color, leave a mass of cicatricial tissue, which, by its contraction, causes such distortion of the features that the exchange of a red or bluish blotch for the resulting deformity can hardly be called an improvement.

A careful microscopic examination discloses the fact that *angioma simplex*, which is by far the most common form, consists of an intricate, preëxistent, and newly-formed network of tortuous, frequently anastomosing, bloodvessels, somewhat larger than ordinary capillary vessels, containing at short intervals varicose dilatations, spindle and cylindric sacculi, with walls somewhat attenuated (Ziegler). We observe small vascular lobules located about the sweat-glands and hair-follicles (Billroth), constituting vascular districts, which coalesce, forming larger or smaller vascular areas. In the connective tissue, which has increased, and the intervascular spaces, are many lymphoid cells, single and in groups (Kaposi). We find this vascular growth usually occupying the rete mucosum and the corium, nearly always reaching and frequently occupying the subcutaneous cellular tissues, reaching as deeply as the hair-follicles and sweat-glands. This vascular network is

composed of a surprisingly large number of bloodvessels, so that in artificially-injected sections (Ziegler) they are so numerous that the intervascular connective tissue seems exceedingly insignificant.

It will be seen that any caustic measures, to be effective, must destroy the entire thickness of the integument, including a portion of the subcutaneous connective tissue, and cause a burn of the third degree. While this mode of treatment may be of service in small nevi, it becomes exceedingly objectionable in those large forms that extend over the greater part of one side of the face, on account of the resulting cicatricial contraction.

Such remedies as nitric acid, glacial acetic acid, solution of caustic potash, which have so long been popular, have been, as they should be, relegated into the forgotten past. Their action, while destructive to the tissues to which they were applied, usually effectually obliterates the cutaneous vascular supply, and cannot be limited to the affected tissues. The destructive action frequently extends to the facial muscles, and sometimes to the nerves, so that we have the effect of a facial paralysis. The vascular obliteration by means of subcutaneous injections of tincture of ferric chlorid or tincture of cantharides is dangerous on account of the risk of embolism, which in several instances has caused death (Van Harlingen, Holgate). Vaccination, so highly recommended, may be of service in nevi of limited size, but can be of little service in extensive affections. Of extensive linear scarification, while it has improved a number of my cases, I cannot say that the results have been satisfactory. The use of the Paquelin cautery, in the practice of others and in my own, has left linear cicatrices, which always remind one of the seamed face of the German duel-loving student, which in Germany may be considered a mark of bravery, but in this country might suggest the battle-scarred ruffian. With ligatures I have failed, and could hardly have expected to succeed when it is remembered that in rare instances only large arterial trunks communicate directly with the vascular growth. With injections of alcohol, as proposed by Holgate, I have had no experience, but they would seem to me to be open to the same objections as those of ferric chlorid. A solution of 8 per cent. corrosive sublimate in collodion as a caustic has proved successful in small nevi, but in the large varieties has been almost a failure in my hands. Electrolysis has given me more satisfaction than any of the methods mentioned. The electrolytic action is entirely under the control of the operator. The destructive action of the needle can be checked in an instant. As large an area can be treated as is desirable or seems indicated. But in spite of the greatest care a streaked appearance of the nevus cannot be prevented. We cannot judge of the depth or the amount of the tissue involved by the vascular structure.

It occurred to me that if we could devise a method by which the entire structures involved by the vascular growth could be accurately and completely removed, and the cutaneous defect thus produced be so repaired as to prevent extensive cicatricial contraction, and to establish a normal color of the part, we should have found an ideal method. In the following case I have made an attempt to accomplish this end. While my experience has been limited, yet the results promise so much that I feel encouraged to continue work in this

¹ Read before the Missouri Valley Medical Society, at Council Bluffs, Iowa, September 20, 1894.

line, with the conviction that with increased experience we shall be able to record improved technique and better results.

M. B., twenty-four years of age, has always been well except for the diseases incident to childhood. She stated that from birth she had been afflicted with a "port-wine mark," possessing the same proportionate size throughout life. I found, on inspection, an area beginning in the left temporal region, extending along the margin of the lower eyelid toward and to the median line of the face, reaching as high as the brow, extending over the left side of the nose downward over one-half its surface, and involving the entire thickness of the upper lip. From the left angle of the mouth the line of demarcation extended with a downward curve upward to the temporal region. The color of this area was a reddish-purple, but all color disappeared on pressure. The margins of this discoloration appeared irregular and sharply defined, but on careful inspection faded rapidly into the normal cutaneous color—constituting what is ordinarily known as a *nævus vasculosus*, or an *angioma simplex*. The left side of the face was decidedly enlarged, particularly the left half of the upper lip. The alveolar mucous structure of the left half of the superior maxilla contained a vascular new-formation, soft, compressible, of a dark-purple color—a *cavernous angioma*.

On September 11, 1893, a solution of 8 per cent. corrosive sublimate in collodion was applied over the outer third of the nevus. In one week a slough exactly corresponding to the surface covered by the sublimate collodion film separated, leaving a granulating excavation, which rapidly filled and underwent epidermization in two weeks. Then the second third of the nevus underwent a similar process, and finally the remaining portion. A wedge was excised from the inner side of the lip, and the alveolar angioma was treated with galvanism by means of needle-punctures. The patient was discharged from the hospital with the hope that in time there would be capillary obliteration sufficient to change the nevus to the desired color. She returned in three months. The only improvement noted was a change from a purple hue to a dark pink. The patient had been very despondent, had secluded herself and despaired of ever being freed of her misfortune. The thought suggested itself, why not remove the entire abnormal growth with the knife, and immediately cover the defect with transplanted normal integument.

Accordingly, on March 12, 1894, under chloroform-anesthesia and strictly aseptic conditions, one-third of the affected integument was dissected away, cutting well into the subcutaneous tissues, so as to insure the entire removal of the growth. The left arm having been rendered aseptic, several Thiersch flaps were removed, of sufficient length and breadth to cover the facial defect, except at the outermost angle, where, experimentally, a small portion of the affected skin was placed in order to note what changes, if any, would take place in it. The denuded surface having been entirely covered with Thiersch flaps, a thick coating of iodoform was applied, then a piece of perforated aseptic silk protective, then iodoform-gauze, a cotton pad, and a binder. This dressing was removed in forty-eight hours, and the wound was irrigated with sterilized water. All the flaps showed evidences of adhesion. A dressing was applied

as before, and changed daily. In one week all flaps had become firmly adherent.

It was interesting to observe, from day to day, the changes that took place in the angiomatic graft which was placed at the outer angle of the wound. In forty-eight hours it had become adherent; its color was of a darker shade, and it seemed thicker. It grew darker and thicker from day to day, until the tenth day, when it had assumed a dark-purple hue. It was compressible, but immediately became swollen again when pressure was removed. The graft was then removed with a knife, and it was found to have become firmly adherent. Vascular communication had become established. The graft was found to have become a *cavernous angioma*.

On this day a second section of integument was removed and covered with Thiersch flaps, and dressed as before. The upper end of one flap, under the margin of the eye, became detached during the first dressing, and this sloughed, and the wound healed by granulation.

Two weeks later the last third of the nevus was dissected away. Considerable difficulty was experienced in removing the integument about the inner canthus and between this point and the brow. The skin was not very thick at this point, so that there was danger of injuring the canaliculi. Thiersch flaps were used as before, and became rapidly adherent. It was now found that at the point where one of the flaps which had been placed with one end against the denuded lower lid, and had been detached accidentally during the first dressing, and later sloughed, the wound healing by granulation, contraction had taken place and everted the inner third of the lower lid, requiring a second denudation and flap.

I must confess that it may be too early to judge of the result at the present time; still the appearance of the site of the old nevus is such as to be in every way encouraging. The appearance is identical with that observed in other cases in which flap-transplantation was employed after the removal of other forms of neoplasm and in granulating surfaces after burns, the skin becoming in the course of time of a normal appearance. In the case under consideration there remains no trace of nevoid structure, the whole surface is gradually becoming of a lighter shade, and the only discoloration remaining is of a pinkish hue, as I have invariably found in transplanted skin of recent date.

The method pursued in this case seems rational and promising, because, first, we remove the entire nevoid structure, and, secondly, because the defect is covered with integument of a normal character. It is like the removal of sod, poor with wire grass, from a lawn and replacing it with a new blue-grass sod, which is more pleasing in appearance. The immediate transplantation of skin-flaps prevents the contractions and the consequent deformity seen so constantly after such methods as cauterizations of every description. The wound-repair is prompt, rapid, and painless.

The removal of the nevoid structure should be as rapid as consistent with good work, as the hemorrhage is likely to be profuse. A slow and tedious dissection might entail such a loss of blood as to be harmful; cut away rapidly, swabbing just enough to enable you to see that you are beneath the vascular zone. Have artery-clamps lying near, in order that no time may be lost in catching spurting points. When denudation is com-

plete, and all bleeding points tied, apply a thick wad of iodoform-gauze, and direct an assistant to make firm pressure while you uncover the previously disinfected arm, which, meanwhile, has been wrapped in a sublimate towel. Then with your razor, ground flat on one side and concave on the other, you carefully remove a flap of skin, your left hand having grasped the arm in such a manner as to make the skin tense. This skin-flap may be from four to six inches long, and from one to one and one-half inches wide, and of a thickness reaching into the papillæ. As you cut, the flap will shrink together on the concave side of the razor. When long enough, detach it from the skin. Remove the gauze pad, spread the flap on the denuded surface, and tease it into place with a probe and grooved director. Avoid thumb-forceps, as you may bruise the flap and destroy its vitality. It will be found that the flap has contracted nearly one-half; therefore it is necessary to cut flaps nearly twice as large as desired. A sufficient number of flaps are used to entirely cover every part of the vivified surface. Use extreme care about the lower lid; be very liberal with the flap, exercise every precaution so that the edge of the flap be not turned under, as in this case it would fail to adhere. If the flap should fail to adhere at this point, or is accidentally torn off with the dressing, immediately apply a new graft, in order that healing by granulation, with consequent contraction and eversion of the lower lid may be prevented—a deformity quite as undesirable as the nevus itself.

Every antiseptic precaution must be observed to obtain the best result. The surface to be operated upon must be rendered aseptic, and the operator's hands, sponges, instruments, especially the razor, must be rendered aseptic. The arm, or rather the portion of the body from which the flaps are removed, must be given the same careful attention. The field of operation must be carefully surrounded with sublimated towels, and an aseptic cap applied to the head. If we are surgically clean, the transplanted flaps are almost certain to adhere. If any detail is overlooked, we are almost certain to fail.

A CASE OF CONGENITAL DEFORMITY OF THE UPPER AND LOWER EXTREMITIES AND OF THE SPINAL COLUMN.

BY I. NEWTON SNIVELY, A.M., M.D.,

INSTRUCTOR IN PHYSIOLOGY IN THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.

ON September 22, 1891, I was called to attend Mrs. C., who was reported to be suffering from an attack of "cramps." I found my patient to be a young woman, eighteen years of age, of small stature, thin in flesh, pale and anemic, and of a highly nervous temperament. I was told by members of her family that she had been married only four months and had not had her menses during that time.

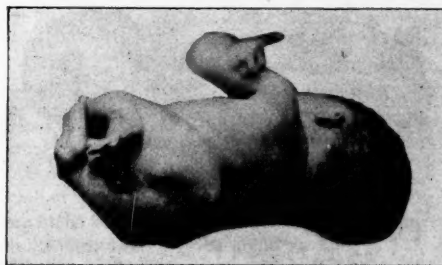
After observing the patient a few moments, it was evident that she was in the first stage of labor. Upon digital examination I found the os partially dilated and the occiput presenting. The abdomen was not as large as is usual in pregnant women at full term. Labor progressed normally for about one hour and a half, when the uterine contractions began to grow weak and finally almost ceased. One hour later, when I returned to my

patient, I found the labor-pains quite severe and following one upon the other in close succession; from this time on labor advanced normally to delivery, four hours and twenty minutes after I was first summoned to the case.

A boy-baby with numerous deformities was born. These consisted in absence of the lower end of the spinal column, the coccyx, and the protruding backward of the lower end of the sacrum. Double club-foot was present, double club-hand, displacement of both ankles, imperfect knee-joints, and left hip-joint. There was also imperfect development of the wrist-joints and elbow-joints, flat-feet, flat-hands, imperfect external ears, a double great toe on each foot to the distal joint, with double nail. The fingers were normal and their joints perfect; the great toe on each foot was unusually long, fully twice its normal length; the other toes were perfect. The child was a strong, fleshy, vigorous, and healthy infant.

Perhaps the most striking deformity was the absence of the coccyx and the pointing backward of the sacrum. This deformity is well shown in Fig. 1. It was not a

FIG. 1.

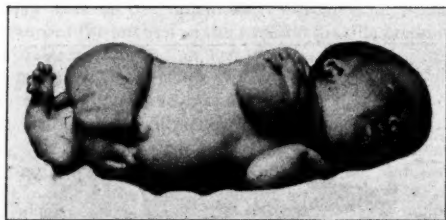


spina bifida; the prominence seen above the anus was of bone, and resistant to the touch, and not of that smooth elastic nature found in tumors caused by incomplete closure of the bony canal in the spinal column. It contained no fluid, and could not be reduced in size by pressure. The right foot was in the most extreme form of talipes equino-varus; the sole of the foot pointed upward and rested on the abdomen. The foot was flat, the plantar fascia and internal lateral ligaments were shortened, and the tibialis anticus and posticus muscles were contracted. There was marked displacement of the tarsal bones; the astragalus was tilted downward, the scaphoid was displaced inward and downward by the action of the tibialis posticus, and the tubercle on this bone was very prominent; there was in addition marked rotation at the astragalo-scapoid and calcaneo-cuboid junctions. The displacement of these bones gave the foot a short, flat appearance, somewhat resembling the human hand. The os calcis was rudimentary, and in consequence the heel was less prominent than normal. The articulation at the ankle-joint was imperfect, owing to the displacement of the astragalus. The foot was strongly adducted. The right knee-joint was displaced inward at a right angle, the tibia and fibula were shorter than normal and curved inward, and the patella was rudimentary on the right side. The femur was normal and in the socket at the acetabulum. The right hip-joint was perfect in development, and admitted of free

motion in all directions. The left foot was in extreme talipes equinus. The gastrocnemius and soleus muscles were shortened, the tendo Achillis was tense, so that flexion of the foot was impossible; the foot was slightly adducted. The sole of the foot rested on the scrotum and buttocks, from the strong flexion of the limb at the knee and thigh. The left knee was strongly flexed; efforts at extension were met by bony and ligamentous resistance. The left hip-joint was also in extreme flexion, and could be extended only to an angle of 45° . The left femur was normal in length and development. The flexion at the hip-joint was due to a contracted condition of the flexor muscles of the thigh.

The deformities were alike on both sides in the upper extremities, and resembled very much those found in the lower limbs. The humerus was normal in length and perfect in development on both sides. The shoulders were perfect and admitted of free motion. The deformities of the upper extremities are well shown in Fig. 2. The

FIG. 2.



forearm was tightly flexed upon the arm and could not be extended beyond an angle of 35° , from contraction of the biceps muscle. The radius and ulna were shorter than normal, and curved inward; the ends of these bones were rudimentary. Efforts to extend the forearm at the elbow caused a creaking noise, especially when forced beyond an angle of 35° . The wrist-joints were rudimentary, the hands were adducted. The palms of the hands rested on the arms in the deltoid region; there was slight motion at the wrist-joints. The fingers were normal in length, and the phalangeal joints perfect. The external ear was marked by the absence of part of the lobule. The head and trunk were perfect in form and development, except for the absence of the coccyx.

The infant cried lustily after birth, was well nourished, and gave every promise of living if properly cared for and nourished.

The father, when he saw the hideousness of the deformity, and being desirous also to conceal the birth of a child so soon after his marriage, placed it, contrary to my wishes and advice, in a foundling-home in Philadelphia. The physician of that institution reported its death as due to debility when it was twenty days old.

Medical literature is replete with instances in which vivid mental impressions are supposed to have produced a direct effect upon the development of the fetus. Mrs. C. gives a history of having received at least two severe mental shocks during her period of gestation—one seventy-one days after conception, and another three months before parturition. On February 25, 1891, while employed in a paper-box factory, she saw the clothing of a friend caught by a revolving shaft, which drew her to

the floor, and as she fell her limbs and arms were twisted about the shaft. Some of her clothing was torn off, and there was considerable blood lost by the tearing out of part of her hair. Mrs. C. was close by when the accident occurred, and was very much frightened, and did not fully recover from the shock for several months.

She was, as I have already said, naturally of a weak, nervous temperament, which condition was, no doubt, augmented by her having conceived out of wedlock and having to support herself by working in a close, dusty room in a box-factory. Her surroundings were not calculated to produce that cheerfulness and equanimity of mind desirable for pregnant women; on the contrary, her weak body and agitated mind were well calculated to produce the result in her offspring that has been here shown, if sufficient emotional excitement were brought to bear upon her. She gives February 25th as the day of the fright. It was the birthday of a lady friend, who visited her in the factory that day and saw the accident with her. Supposing the child to be a full-term baby, if we count back 280 days, it would bring the day of conception on December 16, 1890. This was seventy-one days before February 25th, the time of the fright.

Mrs. C. gives the history of having had a second fright in June, 1891, about six months after the beginning of pregnancy. At this time her own clothing was caught by a revolving belt, and part of it torn from her body. This accident does not seem to have made as vivid an impression upon her mind as the first, as she does not recall it in all its minutiae, as she does the one of February 25th.

I wish to mention in this connection that the woman for three or four months prior to parturition had been in the habit of lacing herself very tightly, so as to conceal from friends and relatives the near approach of her maternity. She had so far misled her relatives that they administered anodynes for her "cramps" prior to sending for me. Authorities on this subject do not believe that tight lacing has anything to do with the production of deformities.

On November 19, 1892, fourteen months after her first confinement, I delivered the woman of a perfectly formed male child. This second child has since developed a strumous diathesis, and at present has enlarged suppurating glands in the neck.

The husband has lately died of tuberculosis of the lungs, with which disease he had suffered for five years or more. His family history is tuberculous. The mother's relatives are all healthy, and none is deformed.

2501 OXFORD STREET.

GUNSHOT-WOUND OF THE SPLEEN AND KIDNEY; ABDOMINAL SECTION; HEMOSTASIS BY DEEP SUTURE; RECOVERY.¹

By LOUIS McLANE TIFFANY, M.D.,

OF BALTIMORE, MD.,
PROFESSOR OF SURGERY IN THE UNIVERSITY OF MARYLAND.

GUNSHOT-WOUND of the spleen, recognized, treated, and cured, is believed to be of sufficient rarity to justify placing the following case on record.

The patient was a male negro, twenty years of age.

¹ Read before the Southern Surgical and Gynecological Association, Charleston, S. C., Nov. 13, 1894.

Two hours previous to entering the University Hospital, March 21, 1894, he had been shot with a small-caliber rifle from a distance of twenty feet, the weapon being directly behind him and he being erect. His urine was slightly albuminous; the pulse, temperature, and respiration normal. There was a bullet-wound three inches to the left of the spine just below the last rib, from which blood oozed. Dr. Spruill, Resident Physician, after proper cleansing, enlarged the wound, found that the kidney had been injured and that the bullet had passed onward, presumptively into the peritoneal cavity; he filled the wound lightly with gauze and notified me. I saw the patient three hours later, about five hours after the shooting. The only change that had taken place since entry into the hospital was an increase of five per minute in the number of respirations; the pulse and temperature were not changed, and there was no appearance of shock and no pain. External examination of the abdomen by touch and palpation revealed nothing, not even painfulness. Dr. C. W. Mitchell, one of my colleagues, thought that the respiratory movement was rather less marked over the left than the right side of the abdomen. I could not detect the difference however.

The patient was anesthetized, laid on the belly, and the wound, after being enlarged, was examined. The upper portion of the left kidney was perforated, and dark blood flowed from the peritoneal cavity beyond. This large wound was filled with gauze, the patient turned on the back, and the abdomen freely opened along the left semi-lunar line. A moderate amount of blood was free in the peritoneal cavity; no wound of the intestine could be discovered, but the spleen was found perforated, blood flowing freely from the wound of entrance, as well as from the wound of exit; the latter wound, in the concavity of the organ, was slightly the larger of the two.

The perforation through the spleen was about three inches from the free lower border. Unwilling to subject the patient to splenectomy, I attempted to arrest the bleeding in the following manner: Along needle threaded with silk was passed entirely through the spleen central to and parallel with the bullet-track; the long ligature was then tied over the free border of the organ so as to press the surfaces of the wound together tightly enough to arrest bleeding, yet not to tear through the splenic tissue; the ends of the ligature were cut short, the peritoneal cavity cleansed by copious irrigation with hot water and the abdominal wound closed. The kidney was tamponed with gauze through the dorsal wound. Convalescence was uneventful; the anterior wound healed by primary union; urine flowed from the dorsal wound for two days only, union by granulation taking place. The patient left the hospital well, April 2d.

The literature treating of spleen-wounds is meager. Probably about all that is known will be found in the *Medical and Surgical History of the War*, Part II, Surgical Vol., p. 149 et seq., and it is not necessary to recapitulate here the information there set down.

Symptoms and treatment deserve mention. The wound being small, hemorrhage was not profuse, and no abdominal organ save the spleen was wounded. I could not recognize any evidence of spleen-wound without inspection; pressure, handling, percussion, revealed nothing, the belly remaining soft and flaccid. Twice I

have opened the abdomen for gunshot-injury, finding wounded intestines; both cases had the belly-walls much more rigid than had the subject of this report. The lumbar incision showed me dark blood flowing from within the peritoneal cavity, and for this reason the abdominal section was performed, and not because of information elicited by handling.

Treatment of a wounded spleen by celiotomy places that organ in the category with other peritoneally covered organs, and calls for no comment; but the mode adopted for the arrest of hemorrhage is noteworthy. The classic treatment for a perforating wound of the spleen is splenectomy, because it has been held that bleeding is not otherwise to be stopped; this we now know is not so, but that it is possible by ligature to induce hemostasis. In case the wound is larger than in the instance here reported, it would be necessary to interfere without delay and pass several sutures in the manner stated, so as to make pressure over a larger area. When rupture of the spleen has occurred this method of hemostasis seems especially indicated, for thereby support to the injured viscus would be afforded.

A CASE OF APPENDICITIS.

BY J. W. HICKMAN M.D.,
OF TACOMA, WASHINGTON.

A. W. L., aged thirty-three years, was in the early afternoon of September 19th suddenly seized with excruciating pain in the belly in the right inguinal and right lumbar regions. The only symptoms prior to this were a chill of several minutes' duration about twelve hours previously, and in the morning a feeling of "stiffness," as he expressed it, referred to the abdomen, but to no particular part of it. The forenoon was occupied in dictating letters of business and in looking after a sick member of his household. I first saw him about 5 P.M., and was told that in addition to the pain he had vomited a few times. His pain was more intense in the region noted, but radiated here and there over the whole abdomen. There was no very well-marked tenderness. The temperature was 102°, the pulse 120, the hands and feet cool. The bowels had been moved the day previously, the last time they ever did move. I gave the man 12 grains of Dover's powder and 2 grains of calomel in four powders, and directed that one be taken every half-hour, and further directed that two hours after the last powder a heaping teaspoonful of magnesium sulphate be given every hour and a half, to be stopped when the bowels should be thoroughly evacuated. I was called to see the patient at 5 A.M. of the next day; the pain was so excruciating that I gave him $\frac{1}{3}$ grain of morphin hypodermatically, which relieved him completely. The pain was referred at this time to the entire abdomen, and was accompanied by a widespread tenderness, more intense, however, over the ileo-cecal region. The temperature was 99.2°, the pulse 140, tense, and shotty to the finger. The face wore an ominous, relaxed expression, as the man slept after the morphin. His breathing was thoracic. There was now no difficulty in making a diagnosis of general peritonitis. Notwithstanding that he had taken about 2 ounces of magnesium sulphate, most of which he had retained, his bowels had not operated, nor had there been any rolling or rumbling of the intestines. About 10 A.M. I was

again hastily summoned on account of pain. Realizing the gravity of the case, I asked for a consultation. The same conditions obtained except that the temperature had risen to 101.5° . The same treatment was continued. Three hours later there was scarcely a perceptible pulse at the wrist; the breathing was about 30 and shallow; the hands and feet were cold; in short, the patient was in collapse. He died at 11.20 P.M., about thirty-four hours after the initial pain. A post-mortem examination was held the next morning, and from a pint to a quart of fetid pus was found in the abdominal cavity, with no adhesions except very feeble ones at a couple of points. The appendix was gangrenous and had a ragged-looking opening in one side.

The unusual feature of this case is, of course, that there was practically no complaint until the rupture of the appendix gave rise to a general peritonitis. There was obtained an indistinct history of an attack, similar to this at its beginning, eight years ago.

Since writing the foregoing note I have operated on a case forty hours after the first pain, finding the appendix gangrenous and ready to give way at several points, and the cecum in the same condition at the appendicular junction over an area about the size of a silver quarter.

MEDICAL PROGRESS.

Puerperal Infection with the Bacterium Coli Commune.—EISENHART (*Archiv für Gynäkologie*, Bd. xlvii, Heft 2, p. 189) has reported the case of a woman, thirty-two years old, who, following her fifth, uncomplicated, labor, presented fever, pain in the right side, and an offensive vaginal discharge. The functions of the bladder and bowels were undisturbed, but an obstinate swelling of the right foot appeared. The uterus was displaced backward and somewhat to the right. Upon its right margin a painful exudate was detectable, while the cervix was surrounded by a suppurating ulcer. The temperature was 104° , the pulse 122. A diagnosis of acute purulent parametritis was made. Following the use of the ice-bag, the administration of opium and the employment of vaginal injections of lysol, the symptoms soon disappeared. In a short time, however, pain appeared at the flexure of the right thigh, where there was found a dense infiltration, extending three or four fingers' breadth above Poupart's ligament, and beneath which could be felt a thrombus occluding the femoral vein. Local applications and manipulations failed to afford relief. In a short time an abscess formed above Poupart's ligament, which on palpation yielded a sense of the presence of air. A similar sensation was imparted over a small area below Poupart's ligament. Additional tumefaction was observed, involving the upper third of the right thigh. This was sensitive, soft and elastic. The patient referred certain peculiar sensations and sounds to the bladder at the termination of micturition. The urine removed by catheter was of orange-yellow color, and emitted a peculiar but not disagreeable aromatic odor. It had a specific gravity of 1015, was of a feebly acid reaction and deposited considerable sediment. It contained large quantities of albumin, but no blood. Microscopically large numbers of colorless corpuscles were found, but no tubercasts. Bacteriologic investigation disclosed the presence

of the bacterium coli commune. The swelling of the thigh increased, and edema of the dorsum of the right foot and the greater and lesser labia became added to the symptoms. An incision into the swelling gave exit to a large quantity of thick, creamy pus, containing many large and small air-bubbles. This pus had a peculiar, though not putrid or fecal odor. Bacteriologic examination disclosed also the presence of the bacterium coli commune. The abscess-cavity at first secreted considerable quantities of pus, which later diminished under the use of methyl-violet in the form of bougies. For a short time the condition of the patient improved, the swelling and edema disappeared, pus was freely discharged in moderate amount, but subsequently the woman became worse. Hyaline casts were for the first time found in the urine. Symptoms of nephritis with uremia developed and finally progressed to a fatal issue.

On post-mortem examination a moderate excess of fluid was found in the pericardial, pleural and peritoneal cavities. The intestinal serosa was smooth and glossy, and free from adhesions excepting on the part of the rectum with the adjacent uterus. The spleen was enlarged and soft. The kidneys were in a state of parenchymatous degeneration, together with amyloid change. The external wound communicated with a sub-peritoneal sinus passing from the middle of the horizontal branch of the right pubic bone backward and upward toward the vertebral column, and terminating at the level of the promontory of the sacrum in a cavity about as large as a pigeon's egg, filled with thick pus, and not distinctly circumscribed from the surrounding structures, which appeared undermined and friable. Behind and to the right side of the uterus were numerous cicatrices. An incision into the upper third of the right thigh disclosed the presence of pus distributed between the muscles and other structures.

A Convenient Clinical Manometer.—A portable manometer for the estimation of blood-pressure in the radial artery, devised by CHAPMAN (*Birmingham Medical Review*, September, 1894, p. 146), consists of an ordinary U-shaped mercurial manometer having the upper end of the shorter limb, which is ten inches in height, bent at a right angle, and fitted into a perforated india-rubber stopper, over which is drawn and securely ligated an ordinary air-tight india-rubber finger-stall. The longer limb of the U is double the length of the shorter, and open at its end. The shorter limb is graduated into fourteen centimeters. Zero begins at the upper level of the mercury, about an inch below the angle; the space above communicates with the interior of the finger-stall, and contains air. Both limbs of the tube are fractured, the longer limb in mid-length, the shorter in its horizontal portion, the ends being united by means of thick India-rubber tubing. This arrangement enables the tubes to be bent upon themselves, in which position they are retained by means of a rubber band, and this prevents the escape of the mercury at the open end of the longer limb, and allows the instrument to be put into a case of convenient size.

The application of this manometer is devoid of difficulty. The patient's wrist is adjusted beneath the finger-stall, in a slightly-extended position, and if pressure is then made on the finger-stall by the fingers of the

operator the mercury will fall in the shorter and rise in the longer limb, and the difference between these levels will represent the intra-arterial radial blood-pressure. The hope is expressed that the instrument will come into general use, its claims to favorable recognition being based upon the simplicity of its application, its small cost, which "is no more than that of a clinical thermometer," and upon the valuable information so quickly and easily obtained by its use.

The Occurrence of the Bacillus Diphtheriae Outside of the Body.—WRIGHT and EMERSON (*Centralbl. für Bakteriologie und Parasitenkunde*, Bd. xvi, No. 10, 11, p. 412) have made a study of the dust upon the floor of the diphtheria-pavilion of the Boston City Hospital and upon the clothing and person of the attendants, to determine if diphtheria-bacilli could be found. The diphtheria-pavilion is isolated and divided into large and small apartments. It contains seventy beds. The general sanitary condition is good. The results were as follows:

Of four cultures from floor-sweepings from the brush and the cloths used in dusting, but one (from the brush) was positive as regards diphtheria-bacilli. Other bacteria were also present. Of four examinations of the dust and other matters adherent to the shoes of the attendants, three showed the presence of a small number of diphtheria-bacilli, together with other bacteria. Cultures were made from the hair of the attendants in four cases, with positive results in one. Examination of the margins of the dresses of the attendants, of the bed-clothing, of the shirts of the patients, and of the finger-nails of the attendants, were all negative as regards diphtheria-bacilli, as was also an examination of the air of the pavilion. In two of the five examinations in which bacilli were found the degree of virulence was slight.

The Bacteriology of Diphtheria.—From a study of eighty-two cases of diphtheria WRIGHT (*Boston Med. and Surg. Journ.*, vol. cxxxi, No. 14, p. 329), concludes that there is practically no difference in virulence to be observed between the bacilli derived from severe and mild cases of diphtheria. Cases in which true diphtheria-bacilli have been present for a longer or shorter period of time furnish fewer virulent cultures than cases of recent beginning.

The diphtheria-bacillus does not, as a rule, lose its virulence by long-continued residence in the pharynx and air-passages. It exists in all degrees of virulence down to innocuousness, as far as is shown by the results of its inoculation into guinea-pigs, and the intensity of the reaction in the animal bears no constant relation to the symptoms presented by the case from which it was derived. There is no relation to be observed between the age or sex of the patient and the virulence of the bacillus.

Hepatic Colic without Gall-stones.—LÉPINE (*Intern. klin. Rundschau*, 1894, p. 387; *St. Petersburger med. Woch.*, No. 36, p. 331) contends that hepatic colic may result from simple spasmodic contraction of the gall-bladder or biliary ducts. This opinion is based on both clinical, pathologico-anatomic, and experimental evidence. From the clinical point of view reference is made to the hepatic

colic observed in hysterical individuals as a result of emotion, without discoverable cause in the intestinal evacuations. In some individuals the ingestion of certain articles of food is followed by hepatic colic. A case is cited in which after death no concretions were found in the choledoch duct, although a few small grains were present, together with active contraction of the walls of the duct. In dogs spasmodic contraction of the lower portion of the choledoch duct may be induced artificially. It is maintained that contraction of the biliary canals may be induced reflexly.

The Sterilization of Catgut.—TSCHERNING (*Hospitals Tidende*, 1893, No. 48; *Centralbl. f. Chir.*, No. 38, p. 897) has employed dry heat in the sterilization of catgut for sutures and ligatures, with satisfactory results. Catgut thus prepared retains its strength, and is easily preserved. The gut is cut in suitable lengths for use in operation, and enclosed in double sealed envelopes. These are placed in a sterilizing oven and the temperature gradually raised, an hour being occupied in increasing the heat to 176° F., and two hours more in increasing it to 302° F. For three hours the gut remains exposed to this temperature, and then the oven is permitted gradually to cool. Bacteriologic investigation has shown gut thus treated to be absolutely sterile.

The Functions of the Supra renal Gland.—As the result of a further study (see *THE NEWS*, July 21, 1894, p. 71) AULD (*British Medical Journal*, No. 1762, p. 745) concludes that the functions of the supra-renal gland are the destruction of certain effete products of metabolism which are of the nature of ptomaines, and the elaboration of a secretion which is absolutely essential to the blood (hemopoietic). The destruction of the gland is followed by an auto-intoxication and a profound alteration in the chemistry of the blood, which entails, amongst other things, degenerative or nutritional changes in the nervous and digestive systems, and derangement of the color-regulating metabolism.

Pneumonic Orchitis.—PRIOLEAU (*Le Mercredi Médical*, 1894, No. 36, p. 439) has reported the case of a man of advanced years in whom a suppurating orchitis developed in the interval between two attacks of pneumonia. The first attack lasted for twelve days, and was of an insidious type. Three days after its termination the patient was seized with pain in the left testicle, with chill and fever. An abscess formed, examination of the pus from which disclosed the presence of diplococci. The patient recovered, but a month later was seized with a second attack of pneumonia, which terminated fatally.

The Disinfection of Catgut.—At a meeting of the Surgical Society of Berlin, SCHIMMELBUSCH (*Deut. med. Woch.*, 1894, No. 38, Supplement p. 97) described the method of treating catgut for surgical purposes employed in the clinic of Prof. v. Bergmann. This consists in first removing the contained fat and then placing the gut in a 1 per cent. solution of mercuric chlorid in 80 per cent. alcohol, and frequently stirring. Repeated bacteriologic examination has shown such catgut to be free from microorganisms.

THERAPEUTIC NOTES.

The Antitoxin-Treatment of Tetanus.—DOUGLAS (*British Medical Journal*, No. 1765, p. 934) has reported the case of a gardener, sixty-three years old, who was bitten upon the thumb by a dog. The man did nothing to the wound, but continued to work in his garden. Five days later he began to feel some stiffness about the jaws, with difficulty of swallowing. When seen, three days after this, the teeth were clenched, and the jaws could be opened only about one-quarter of an inch. The original wound was quite healed. Eserin salicylate, gr. $\frac{1}{100}$, was injected subcutaneously, and chloral hydrate, gr. xx, was ordered every three hours. On the following day the man was easier, and the trismus was not so evident, but the next day there was considerable pain in the back and abdomen. Then followed stiffness in the legs and back, and convulsions, while the temperature began to rise. On the thirteenth day half a tube of Tizzoni's antitoxin dissolved in 22 c.cm. of sterilized distilled water was injected by seven punctures into the abdomen and thighs, with strictest aseptic precautions. The condition of the patient, however, failed to improve, and gradually progressed to a fatal issue. Not much was to have been expected from the specific treatment instituted at so late a stage of the disease.

Pilocarpin in the Treatment of Acute Articular Rheumatism.—DRAPIER (*Journal des Sciences Médicales de Lille*, No. 37, p. 243) reports the case of a man, forty-five years old, who suffered yearly from two or three attacks of acute articular rheumatism. At first the salicylates were employed with success, but subsequently these failed. Other remedies were also employed without avail. In one such attack pilocarpin was employed, subcutaneous injections of $\frac{1}{4}$ grain of the nitrate being made daily. These induced profuse sweating and rendered the patient perfectly comfortable. The treatment was thus pursued for five days more and proved entirely successful; nor did the symptoms return.

In the Treatment of Premature Alopecia LASSAR (*Gaz. Méd. de Liège*, August 9, 1894) recommends washing the hairy scalp with soap and water for about ten minutes daily, using tar-soap and lukewarm water, and finally cold water; the hair should be dried, and frictions with the following solution made: Water, 250 grams; mercuric chlorid, 50 centigrams; glycerin and cologne-water, each 50 grams. This may be followed by shampooing with absolute alcohol to which has been added from $\frac{1}{2}$ to 1 per cent. of naphthol, and anointing the scalp with the following mixture: Salicylic acid, 2 grams; tincture of benzoin, 3 grams; Neat's-foot oil, 100 grams.

The Treatment of Syphilis by Hypodermatic Injections of Mercurials.—At a recent meeting of the French Society of Dermatology and Syphilography AUGAGNIER (*Annales de Dermatologie et de Syphiligraphie*, tome v, Nos. 8-9, p. 927) contended that the employment of mercurial injections in the treatment of syphilis ought to be reserved for exceptional cases, on account of the attendant inconvenience and danger. If in cases of cerebral syphilis, when the indications are extremely urgent, one

may at once begin injections. If the urgency is not clear, inunctions should be given the preference, and only in case of their failure should resort be had to the injections.

For Bronchitic Asthma.—

R.—Extracti stramonii . . . gr. $\frac{1}{8}$.
Potassii iodidi . . . gr. v.
Ammonii carbonatis . . . gr. iv.
Tincturæ lobeliæ æther. . . m℥v.
Aquæ chloroformi . . q. s. ad $\frac{3}{4}$ ss.

Misce et fiat mistura.

S.—A tablespoonful from every four to six hours.

Provincial Medical Journal.

In the Treatment of Chronic Articular Rheumatism, LETULLE (*La Presse Médicale*, September 29, 1894, p. 313) recommends rest in bed, the repeated application of the actual cautery to the affected articulations, passive movements of the joints, sulphurous baths, alternating with warm douches of simple or sulphuretted water, in conjunction with the internal administration of potassium iodid in doses of from $7\frac{1}{2}$ to 30 grains in the twenty-four hours.

For Infantile Colic.—

R.—Tinct. belladonnæ . . . gtt. x-xi.
Infus. canellæ . . . f $\frac{3}{4}$ ij.—M.

S.— $\frac{3}{4}$ every hour until the pain is relieved.

For the constipation, upon which the colic usually depends, a teaspoonful of cod-liver oil may be administered thrice daily. URRIOTA—*La Semaine Méd.*, No. 53.

For Leukoplakia LEISTIKOW (*Monat. f. Prak. Dermat.* Bd. xix, No. 7) recommends the following formula:

R.—Terræ siliceæ . . . 22 $\frac{1}{2}$ grains.
Resorcini . . . 45 "
Adipis . . . 7 $\frac{1}{2}$ " M.

S.—Make a paste and apply topically several times daily by means of a cotton swab.

For Metrorrhagia.—

R.—Ext. opii . . . gr. jss.
Tinct. hydrastis. Canad. . . f $\frac{3}{4}$ ss.
Tinct. zingiberis. . . f $\frac{3}{4}$ jss.
Syrup. aurantii cort. . . f $\frac{3}{4}$ j.
Aquæ destil. . . f $\frac{3}{4}$ ij.—M.

S.—A tablespoonful every three hours.

LUTAUD—*Frauenarzt; Centbl. f. d. ges. Ther.*

Salol in Herpes Zoster.—BILLSTEIN (*Phila. Polyclinic*, vol. iii, No. 33, p. 324) reports cases of herpes zoster in which successful results were obtained from the topical application of salol in powder. Twenty grains of the drug in an ounce of ether were given, with instructions to make the application twice daily by means of a camel's-hair brush.

For Lichen Urticatus.—

R.—Spiritus rectificati } . . . āā f $\frac{3}{4}$ j.
Saponis mollis }
Olei cadini . . . f $\frac{3}{4}$ v.
Aquæ . . . ad f $\frac{3}{4}$ x.

Misce et fiat lotio. S.—To be applied night and morning.
The Practitioner.

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SATURDAY, NOVEMBER 17, 1894.

THE MEDICAL NEWS' SPECIAL REPORT ON THE TREATMENT OF DIPHTHERIA WITH THE ANTITOXIN.

At a very considerable expense of labor, time, and money, and under strictly scientific conditions, THE MEDICAL NEWS instituted, in Philadelphia, the treatment of certain cases of diphtheria with the antitoxin. At the time not an instance of such treatment was known to have taken place in Philadelphia, and there was no injecting material to be had here. Despite many difficulties, we have succeeded in being able to lay before our readers in the current issue the partial reports of five cases thus treated. The investigation is to be continued. For most willing and valuable assistance and coöperation, we are under great obligations to DR. LOUIS FISCHER, of New York, who having some serum at his disposal, has made a number of visits to Philadelphia for the purpose of making the injections; to DR. WILLIAM WELCH, of Philadelphia, in charge of the Municipal Hospital, as also to DR. BEMIS, his able resident and assistant; to DR. D. BRADEN KYLE, the bacteriologist, of Philadelphia; to DRs. FRESE and KNEASS, of the German Hospital; to DR. COPLIN, and to others. To the publishers

of THE MEDICAL NEWS for their generosity, encouragement, and hearty interest, is due our especial gratitude. We trust that the results, direct and indirect, of our endeavors may be found of value to the profession.

THE TREATMENT OF DIPHTHERIA WITH THE ANTITOXIN.

It is a great misfortune, a profound obstacle to medical progress, to have been over-confident and enthusiastic in the adoption of a new treatment or method of procedure. Whatever truth there was in the "Tuberculin Craze;" whatever of final and unexpected good may have resulted or may still result from KOCH's premature announcement, it cannot be questioned that a great mistake was committed, either popularly or professionally, or both, and that this error has resulted in a reactionary skepticism and a failure to test ever so conservatively the value of serum-therapy, and especially that branch of it relating to diphtheria. We have been so fearful of over-zealousness and of possible blundering that we have delayed overlong the duty of testing, even carefully and scrutinizingly as we should test any such thing, the discovery of a therapeutic method of great probable value. All at once, now, we are awakening to a realization of the profound importance of this treatment, and as with all late converts, we are perhaps in some danger of excessive trust and propagandism. We, therefore, wish to urge again the old necessity of caution and prudence in the interests of true medical progress. Let us be in no ridiculous haste. Let us be sure our serum is genuine, that the cases treated are those of proved diphtheria, and let us be on our keenest guard in reporting our cases, that we do not mistake *post-hoc* recoveries for *propter-hoc* therapeutics.

But, in the interests of the same scientific spirit and progress, do let us no longer delay putting this method to the test. It comes to us with a good record, and from excellent sponsors. That we have delayed for a year or two even to think of it, much less to practically experiment with it, still much less to prepare our own immunized serum, is not to the credit of American medicine.

The following figures are given by *La Médecine Moderne*, 1894, No. 85, p. 1319, to show the results obtained by the treatment of diphtheria with the antitoxin: BEHRING and KOSSEL, 30 cases, with a mortality of 20 per cent.; EHRLICH, KOSSEL, and WASSERMANN, 67 cases, with tracheotomy, with a mortality of 44.9 per cent.; 153 cases, without

tracheotomy, with a mortality of 23.6 per cent. ; KATZ, 128 cases, with a mortality of 13.2 per cent. ; WEILGER, 63 cases, with a mortality of 28 per cent. ; ARONSON, 192 cases, with a mortality of 13 per cent. ; ROUX, 448 cases, with a mortality of 24.33 per cent.—making a total of 1081 cases, with an average mortality of 24 per cent.

ROUX (*British Medical Journal*, No. 1765, p. 931) relates that in one of the hospitals of Paris the total mortality in the diphtheria-wards for four years was 51.71 per cent., while among 448 children treated from February 1 to July 24, 1894, with the antitoxin, there were 109 deaths, a mortality of 24.5 per cent. On the other hand, during the same time, 520 cases of diphtheria were treated at the Trousseau Hospital, but without the antitoxin, with 316 deaths, a mortality of 60 per cent. In cases of simple diphtheria not requiring tracheotomy the mortality for four years has been 33.94 per cent. During the months of trial at l'Hôpital des Enfants it fell to 12 per cent., while during the same time at the Trousseau Hospital the mortality was 32 per cent. In the cases of "croup d'opérés" requiring tracheotomy the mortality for four years has been 73.19 per cent. ; with the antitoxin-treatment it fell to 49 per cent, while during the same time at the Trousseau Hospital the mortality was 86 per cent.

There have been recorded in the *British Medical Journal* 39 cases of diphtheria treated with the antitoxin at the hands of a considerable number of practitioners, with 3 deaths, a mortality of 7.6 per cent.

It is announced that the British Institute of Preventive Medicine is prepared to furnish the antitoxin at the bare cost of production, which it is believed will be about 12 or 18 cents for the ordinary dose.

KATZ (*Berliner klin. Wochenschr.*, July 16, 1894 ; *Lancet*, No. 3713, p. 1004) relates that the mortality from diphtheria in the Kaiser and Kaiserin Friedrich Kinderkrankenhaus in Berlin was, in 1890, 50.4 per cent. ; in 1891, 32.5 per cent. ; in 1892, 35.4 per cent. ; in 1893, 41.7 per cent. ; and from the beginning of 1894 until March 14th, when the antitoxin-treatment was begun, 41.8 per cent. From March 14th till June 20th, 1894, 128 cases, in all of which the bacillus of Loeffler was detected, were treated with the antitoxin, with a mortality of 16.5 per cent., as compared with a mortality of 37 per cent. for the same period of the previous year. Of 47 mild cases, all recovered ; of 35 more severe

cases, 1 died ; of 42 still more severe cases, 11 died ; while all of 4 septic cases died. In no case was the antitoxin found to act injuriously. In mild cases the dose was gradually increased from 5 to 7.5 c.cm. ; in severe cases from 3 to 5 c.cm. to 20 c.cm. A weaker solution was employed as a prophylactic in 72 cases exposed to infection, and only 8 of which were attacked.

EHRlich (*Medical Press and Circular*, No. 2894, p. 429) has reported 40 cases of diphtheria, of which 20 were "tracheotomy-cases," treated with the antitoxin, with 4 deaths. Of 41 other cases not thus treated 18 died. In another group of 48 cases treated with the antitoxin there were 6 deaths.

MAURICE (*Lancet*, No. 3713, p. 973) has reported two cases of diphtheria treated with the antitoxin, one successfully, the other unsuccessfully. The fatal case occurred in a delicate, weakly child four years and three months old, who, when seen on the fourth day of its illness, was pallid and collapsed. Twenty minims of the antitoxin were at this time injected ; on the following day twenty minims more ; on the next day again twenty minims, and a day later seventeen minims. The child could not, however, be brought out of its condition of collapse, and finally succumbed. The other case occurred in a well-nourished girl, two years and six months old, who was seen on the second day of her illness. On the third day two c.cm. of the antitoxin were injected, and on the fourth day one c.cm. Convalescence soon set in and progressed to ultimate recovery. In the first case it is believed that life was prolonged as a result of the injections, and in the second there was no doubt that great benefit was derived from the use of the antitoxin.

RICE (*British Medical Journal*, No. 1764, p. 891) has reported two cases of diphtheria successfully treated with the antitoxin. Both were in women, aged thirty-four and thirty years respectively. In one eight minims of ARONSON'S serum were injected on the morning of the second day, and again in the evening ; six minims on the third day, and eight minims on the fourth and fifth days. In the second case eighteen minims were injected on the second day, nine minims in the morning and again in the evening of the third day.

MACLACHLAN (*British Medical Journal*, No. 1765, p. 933) has reported a severe case of diphtheria in a boy, thirteen years old, in which a fatal termination was apprehended, and who, on the fourth day of his illness, was given an injection of forty minims of

ARONSON'S antitoxin into the back. After the injection the child fell into a gentle slumber lasting for five hours. Improvement gradually took place, the temperature alternately rising and falling for a few days, and convalescence shortly set in and led to final recovery.

GLEASON (*Medical Record*, No. 1253, p. 598) has reported the case of a boy, eight years old, in which on the second day of an attack of scarlatina a fibrinous exudate made its appearance on both tonsils and pharynx. The tonsils were greatly enlarged and swallowing was difficult. The exudate gradually changed its appearance, and upon the seventh day the case was diagnosed as one of true diphtheria engrafted upon the scarlatinal angina. The glands of the neck were enlarged and an excoriating nasal discharge was present. Twenty minims of ARONSON'S *Heilserum* were injected, and in six hours forty minims more. Within twenty-four hours the temperature fell from 104.6° to 99°, with a corresponding amelioration of the symptoms. Convalescence was thereafter speedy.

MACGREGOR (*Lancet*, No. 2714, p. 1027) has reported the case of a boy, ten years old, in which on the tenth day of an attack of diphtheria the aspect and general condition of the patient indicated rapid collapse and early death. An injection of 15 minims of the antitoxin at this juncture was soon followed by sleep and distinct improvement. From this time on the progress of the case was favorable and advanced to final recovery.

BOKAI (*Lancet*, No. 3714, p. 1065) reports 35 cases of diphtheria treated from September 21st to October 22d, with the antitoxin, at the Budapest Stephanie Hospital for Children, including 9 cases of pharyngeal diphtheria, 7 of associated pharyngeal and nasal diphtheria, 4 of associated pharyngeal and slight laryngeal diphtheria, and 15 cases of grave laryngeal diphtheria. The oldest patient was twelve years of age, but the majority were under four. Among the whole number there occurred 5 deaths, a mortality of 14.33 per cent. The significance of this result is apparent when compared with the mortality during the month of October of the years 1891 (56.8 per cent.), 1892 (42.9 per cent.), and 1893 (61.7 per cent.). The immunizing influence of the serum was less positive.

FRITH (*British Medical Journal*, No. 1766, p. 1007) reports a case of diphtheria in a child, eleven years old, in which an injection of 19.5 c.c. of the antitoxin into the right flank on the second day of

the attack was followed by a favorable termination. Characteristic bacilli were found in the false membrane from the throat.

FOWLER (*British Medical Journal*, No. 1766, p. 1007) also reports a case of diphtheria successfully treated with the antitoxin. It occurred in a girl, thirteen years old, who received an injection of 2 c.c. of ARONSON'S serum on the second day of her illness.

WAKELING (*British Medical Journal*, No. 1766, p. 1008) has reported a fatal case of diphtheria treated with the antitoxin, occurring in a girl six-and-a-half years old. On the eighth day, when the child was weak and the breathing difficult, an injection of 6 c.c. of ARONSON'S serum was made. Slight improvement followed, and on the second day a second injection of 3 c.c. of serum was made. The breathing, however, grew progressively more difficult, and finally tracheotomy had to be performed. For a short time after the operation improvement appeared to take place, but the heart began to fail, and death occurred rather suddenly.

Recognizing the lamentable slowness of our American profession in testing the value of this method, THE MEDICAL NEWS has sought to stimulate enterprise by instituting treatment in a too limited number of cases, employing therefor what little serum has been obtainable. The results are partly shown in the report presented elsewhere in the current number of THE MEDICAL NEWS. We hope many others will be moved to institute similar experiments, and to make public the closely-scrutinized, accurately-reported results. THE NEWS of last week contained the report of a case by DR. CATLIN, which in many respects was an instructive and typical one. Elsewhere in this issue will be found a trustworthy report of the meeting of the Pediatric Section of the New York Academy of Medicine, which, with commendable spirit, has devoted an evening to the discussion of the subject. We also refer with pleasure to a most suggestive report communicated November 9th by DR. MUEHLECK to the Surgical Section of the College of Physicians of Philadelphia.

The cases reported by DR. MUEHLECK were five in number, occurring in the same family in children from eleven months to six years of age. All the injections were made in from twenty-four to thirty-six hours after the beginning of the attack. For immunization, one cubic centimeter, and for therapeutic purposes from one-and-a-half to two c.c. of ARONSON'S serum were used. Of the five children

four were attacked. Two of these (one eleven months, one six years of age) were not treated with the antitoxin, owing to inability to obtain it, and these two, although treated by the hitherto generally accepted rules of practice, died. One child that had mingled freely with the other cases, and in whose throat typical bacilli were found, was inoculated with the antitoxin as a prophylactic measure, and was not attacked by the disease. In all of the cases except one, the bacteriologic tests proved the presence of the Klebs-Loeffler bacillus. Of the two cases injected with the antitoxin, both recovered; in one tracheotomy was indicated owing to involvement of the larynx, but the stenosis was markedly ameliorated within twenty-four hours after the injection; in the other the mucous membrane of the tonsils, the soft palate and the pharynx was involved, but without stenosis. After the injections there was a rapid fall of the temperature within twenty-four hours, the membrane became fatty and pultaceous and came away in four or five days.

EDITORIAL COMMENTS.

Ne Quid Nimis.—There is a strange psychologic fatality about the American character that makes it run to excess in whatever it does. The reserve of tact and discrimination, the instinctive knowledge of coming or already-passed limitations, the impossibility of foreseeing the need of the brake until the engine has either jumped the obstruction or has been smashed to smithereens—all this seems to have been left out of our intellectual outfitting. Instead of quietly and moderately plundering the taxpayers of a city, our American methods inevitably end in Tweedism. Instead of exercising and training the body by judicious athletics we have modern foot-ball—a spectacle for gods and men! Instead of a decent party egotism we have in politics an exuberant rabidity that makes an editorial writer roar with laughter at his own assumed virtue and at his own extravagances of mendacity about the other party. Instead of Socialism we have Coxeyism. Instead of temperance we have either dead-drunkness or prohibition.

Nor in medicine and in pseudo-medicine can we escape "the defects of our own virtues." Here also we note the peculiar power of crazy excess, the lack of restraint, the disdain of Solon's *ne quid nimis*. A patient told us the other day that himself and his family had taken thirty-two dozen bottles of an anti-rheumatic patent medicine. He found that it was as effective against every other disease as against rheumatism! What a roaring farce this of thousands and thousands of newspapers of this country, supported and bribed to publish millions of pages of ludicrous puffs and lies at millions of dollars of expense, concerning quack concoctions in the preparation of which not a spark of therapeutic knowledge or scientific intellect ever had a finger of influence. What silly nonsense, again, for the American medical pro-

fession to support two-hundred or three-hundred so-called medical journals, when a half dozen or a dozen is all or more than could be supported with dignity and honesty. What criminal nonsense, once more, to have a hundred or more medical colleges, when a dozen would be all that could be decently endowed and carried on with high standards. The dozen would do a hundred times more good for the science of medicine than the hundred could by any possibility do. Lastly, chiefly as a result of this riotous multiplication of so-called medical colleges, we have a perfectly ludicrous excess of physicians half-starving and competing with each other all over the land. The proportion of physicians to the population is higher with us than with any other civilized people. While France finds one doctor enough to 2000 of the people; Germany, the home of scientific medicine, finds the proper proportion 1:3000; and Sweden, 1:7000. We in our suicidal intoxication run the proportion up to 1:600.

What malignant asinarian bacillus has got into our blood that makes us "whoop" everything to the sheerest and most debauching excess?

The Identity of the Streptococcus Pyogenes and the Streptococcus of Erysipelas.—From the first the close resemblance between the streptococcus pyogenes and the microorganism isolated by Fehleisen as the cause of erysipelas suggested the possible identity of the two; but for a long time the proof of actual demonstration was wanting. A number of cases, however, have been observed in which erysipelas has developed in the sequence of some local suppurative process, so that there is good reason to believe that the streptococcus pyogenes and the streptococcus of erysipelas are identical, differing, perhaps, in pathogenicity by reason of certain yet unknown intrinsic and extrinsic variations. We have referred to this subject upon a previous occasion (see THE MEDICAL NEWS, September 9, 1893, p. 300), at the time citing an illustrative case. A parallel observation has recently been recorded by REED (*Boston Med. and Surg. Journ.*, vol. cxxi, No. 14, p. 339), who reports the case of a negro, fifty-four years old, dead of carcinoma of the liver, in which, upon post-mortem examination, the pleura covering the upper lobe of the left lung was dull, its surface being covered with a delicate layer of fibrin. Upon section the cut surface was uniformly grayish in color, and studded with numerous slightly projecting granulations. Cover-slips from this part of the lung showed abundant diplococci, many having distinct capsules, while in cultures from the hepatized lobe of the left lung diplococci also developed, together with the streptococcus pyogenes. The pathologist who conducted the autopsy sustained an abrasion of the skin over the left second metacarpophalangeal joint, and took no precautions toward avoiding septic infection of the wound during the further progress of the autopsy. Twenty-four hours later he began to experience a sense of languor and chilliness, together with some tenderness in the left axilla, which gradually increased. Finally, a distinct chill occurred, and was followed by fever and headache. The site of inoculation became reddened and a little swollen, and there was a slight escape of pus. Several days later a swelling appeared on the right side of the face near the nose, with

increase of fever, and a well-defined attack of erysipelas developed. The disease ran a usual course, spreading to the left side of the face and involving the ear. The pathologist had never had a previous attack of erysipelas. The time that elapsed between the local infection and the development of the erysipelas was four days.

Hospitals for the Tuberculous Poor.—We need here scarcely dilate upon the advantages to be derived from the establishment of hospitals for the care and treatment of the tuberculous. The experiences of the Brompton Hospital for Consumption and Diseases of the Chest, of the North London Hospital for Consumptives, of the Alexandria Hospital for Consumptive Children, of the Infirmary for Consumption and Diseases of the Chest, of the City of London Hospital for Diseases of the Chest, of the Royal National Hospital for Consumptives, Ventnor, Isle of Wight, afford abundant evidence of the good to be accomplished in this direction by effective organization and intelligent administration. In France, Germany, and Austria, also, plans are under consideration or in process of execution for the establishment of similar institutions, while a hospital for tuberculous patients is already projected for New York City. Our own Home for Consumptives at Chestnut Hill and the Rush Hospital for Consumptives are engaged in a laudable work, but the usefulness of both institutions is restricted by lack of funds and accommodations for large numbers, and more particularly on the part of those unable to contribute for their support and care. Thus it comes about that for the sake of the tuberculous poor, and with the aim of restricting the ravages and spread of a curable and preventable disease, there has arisen the necessity on the part of States and large cities of establishing hospitals for the reception and care of such tuberculous individuals as are unable to properly provide for themselves. City Councils will in a few days be petitioned to make an appropriation of \$100,000 to build and equip such a special hospital in Philadelphia, and it is for the purpose of indorsing this petition that these lines are written. The prevention of tuberculosis is no longer a theory, but it has been effectively demonstrated to be a most earnest condition, and a more intimate knowledge of the cause and course of the disease has led to the recognition and adoption of measures calculated to restrict its ravages and prevent its spread. So desirable an end cannot be better promoted than by the establishment of such a hospital as that proposed.

Puerperal Neuritis.—With an expansion of our knowledge of the complications of the parturient and puerperal states, and with a growing familiarity with the lesions of the peripheral nerves, we have come to learn that the intoxications dependent upon infection through wounds and lacerations resulting in the course of childbirth may give rise to a multiple neuritis comparable to that of rheumatic, plumbic, alcoholic, or other like origin. A typical case of this kind was recently reported by LOUNTZ (*Nouvelles Archives d'Obstétrique et de Gynécologie*, 1894, No. 9, p. 419) at a meeting of the Société de Neurologie, of Moscow. The patient was a primipara, twenty-four years old, who passed through pregnancy and labor without complication, the child dying, how-

ever, on the fifteenth day. Three weeks after the labor the woman presented swelling of the face, edema of the extremities, difficulty of deglutition, diplopia, pains in the extremities, and then numbness and weakness of the upper and lower members. Common sensibility was little affected, but the muscular sense was impaired. The knee-jerks and the elbow-jerks were abolished, and electric irritability was diminished. These symptoms were progressive for two weeks. To them were added arrhythmia of the heart, acceleration of the pulse and attacks of suffocation. The lower extremities became entirely paralyzed. By and by, however, the symptoms gradually ameliorated, except the paraplegia, which persisted for a long time. It is assumed that this depended upon a polyneuritis due to infection through a laceration of the perineum incurred during labor.

The Treatment of Typhoid Fever with Cold Baths.—As constant dropping wears away the hardest stone, so has the persistence of Brand and his disciples finally overcome the prejudices of the medical profession and established and forced to universal recognition the great therapeutic utility of cold bathing in the treatment of typhoid fever. With a somewhat natural unwillingness to adopt new methods specious technical objections were raised when once it was shown and admitted that the action of the bath was actually most beneficent and innocuous. Of these objections there remain the difficulty of bringing the necessary appliances and assistants to the bedside of patients in private practice and the fears of the family and the sensibilities of the patient. The last two may be considered as purely sentimental, and not substantial, and means have been devised to overcome the first. One of the simplest and most available devices for effectuating the end in view is that described by BURR (*Chicago Medical Recorder*, vol. vii, No. 4, p. 227). A rubber sheet, $2\frac{1}{2}$ yards long by $1\frac{1}{4}$ yards wide, is slipped under the patient, and drawn up over his pillow, and its edges tucked up alongside of his body. A folding crib-like frame, 6 feet 2 inches long by 2 feet wide and 8 inches deep, is then unfolded and placed over the patient, resting upon the mattress and surrounding the patient, pillow, rubber sheet and all. The edges of the sheet are then drawn up over the top rail of the crib and down the outside to the lower rail, where it is hooked fast by means of rings attached near its edges with elastic tape. There is thus devised a light and perfect tub, with the patient resting undisturbed on his mattress and pillow. The accessories may be a couple of water-buckets, a $\frac{3}{8}$ inch rubber hose, six or eight feet long, for a siphon, to which a spray nozzle may be attached, a sheep's-wool sponge of good size, and a bath thermometer.

Negro Physicians.—Apropos of our recent comment upon the urgent need of negro physicians, we are glad to be informed by Dr. Robert Reyburn that the Medical Department of Howard University of Washington, D. C., has endeavored to meet this necessity, almost half (including six women) of its 436 graduates during the twenty-six years of its existence having been negroes. The Dental Department of Howard University also has graduated 40, including 12 colored men, and 62 (36 colored) have received the degree of Doctor of Phar-

macy. The present medical class numbers 117, of whom 75 per cent. are colored. The Dental Department has 7 colored and 3 white students, and the class in pharmacy 13 students, all colored. It is further to the credit of Howard University to have been among the first to adopt a four-years' graded course of medical instruction. During the past year a training school for nurses has been established in connection with the university, with a current attendance of 77 pupils. The action of Howard University as to the admission of negroes is all the more praiseworthy in view of the practice of Southern medical schools of refusing them admission. Besides the two schools supported especially for the education of negroes by the Methodist Episcopal Church, alluded to in our issue of November 3, it is said that no medical school within 500 miles of New Orleans will allow the negro to matriculate.

The Dangers to which Physicians are Exposed in the performance of their professional duty, particularly when required to be out at night, are forcibly illustrated by a recent experience of Dr. A. M. Phelps, of New York. Returning home at about 5 o'clock in the morning, after having responded to a messenger call, he stopped at a public house for a sandwich, and while making payment was jostled by three men, one of whom abstracted a roll of bills from his pocket. With the aid of a policeman the fleeing culprit was caught and placed in durance. At the hearing before a justice the statement was made that Dr. Phelps presented "the appearance of being drunk and was under the influence of liquor." The policeman who made the charge was, however, unwilling to affix his signature to the written statement, which Dr. Phelps indignantly repudiates and which appears to have been entirely without foundation. Dr. Phelps' denial of the imputation against him is scarcely necessary, for in a question of veracity little credence would be given the word of a New York policeman.

"The Rights, Liberties, Health and Happiness of Homes" are everlastingly threatened in Massachusetts, so say flaring, glaring, flashing, furious circulars of "The National Constitutional Liberty League" of Boston, by the wicked renewed attempt to secure the passage of a very mild medical practice act by the State Legislature. These are the people that are aided by a Harvard Professor on the ground that medical discoveries often come from the so-called quack. As a study of the motives of the opponents of rational medicine these circulars are interesting; they have their lessons also as regards the mechanism of the methods, and they are a charming study for the observer of practical morbid psychology.

The Banquet-bribe.—Some time since, we believe, considerable amusement was furnished the world by the finding of pockets-full of free railway-passes in the possession of some socialistic enemy of the railroads. The laugh deepens into disgust when we contemplate the spectacle of the American medical editors banqueting at the expense of manufacturers of drugs and other articles used by the physician and advertised by the journals of the editors in question. If this is permissible why shouldn't the trussmen banquet the members of orthopedic congresses in the same way, the opticians attend

to the ophthalmologists, etc., etc.? Surely the instrument-makers and the manufacturing pharmacists should "syndicate" their interests, and give all medical societies and congresses their banquets and hotel bills free!

Reform in Relieving Dependency, instead of encouraging it, is shown by the later experience of the Town of Waterbury, Conn., to be brought about by the revised system of administering public alms. This reform was stimulated by the report of a special committee, selections from which were published in *THE MEDICAL NEWS* of October 27. "Despite the hard times an annual saving of about \$8000 is now being made, besides suppressing other gross abuses." Both giver and receiver are thus better off. As has been facetiously said of marriage, almsgiving is a game that two play at and neither wins.

SELECTION.

ATHLETICS.

As regards athletics, what is their aim? I believe what *THE MEDICAL NEWS* says is the aim: "To give every student a rounded, harmonious physical organization, not to train a dozen or two semi-officials to win matches."—PRESIDENT SCHURMAN, of Cornell University, in Annual Address to the Students, September 27, 1894.

SPECIAL ARTICLE.

REPORT OF THE MEDICAL NEWS.

A CLINICAL REPORT OF FIVE CASES OF DIPHTHERIA TREATED WITH THE ANTITOXIN.

BY WILLIAM M. WELCH, M.D.,
PHYSICIAN IN CHARGE OF THE MUNICIPAL HOSPITAL, PHILADELPHIA.

THROUGH the kindness of Dr. Frese I have had the opportunity to test the antitoxin in two cases of diphtheria in the Municipal Hospital. Dr. Frese received the material from the German Consul at Philadelphia, Mr. Meyer, who obtained the serum from the Institute of Prof. Behring, of Berlin. Besides my two resident physicians, Drs. Bemis and Carman, there were also present Drs. Frese and Kneass, both of the German Hospital, at the time the injections were made. Having selected two suitable cases of diphtheria in which the diagnosis was made from the clinical aspect of the cases, a bacteriologic examination was commenced by Dr. Kneass; but without waiting for the result of this examination, and thus losing valuable time, the serum was at once injected. Twenty-four hours later Dr. Kneass reported that Klebs-Loeffler bacilli were present in both cases. Dr. Bemis, my senior resident, closely observed the cases and made careful notes of their symptoms from time to time.

Subsequently, Dr. Louis Fischer, of New York, kindly visited the hospital and injected three additional patients with Behring's antitoxin, in the presence of several physicians. The clinical histories of all these cases are herewith presented:

CASE I.—F. N., two-and-one-half years old, white, female, of Russian descent, had been ill a little longer than forty-eight hours when admitted to the hospital, October 2d. On admission the tonsils were large, in-

flamed, and covered with an extensive exudate, dark-gray in color, and the breath was fetid. There was also involvement of both nares. The glands of the neck were somewhat enlarged, and the color of the face was pale and sallow. The temperature was 100.2° ; the pulse, 124; the respiration, 24. Ten cubic centimeters of the antitoxin were injected at 6 P.M. (the day of admission). During the following twenty-four hours the temperature was recorded hourly, and varied between 99° and 101.4° ; the pulse between 100 and 138 beats per minute; the respirations were from 16 to 28. The exudate in the fauces continued unchanged; there was free discharge from both nares; the greater part of the time this discharge consisted largely of blood. There was also oozing of blood from the mouth; the breath was fetid; the pallor was increasing and of a leaden hue. On November 4th the exudate in the fauces was unchanged; there was considerable epistaxis; the glands in the neck were enlarging; the temperature ranged from 98° to 100° ; the pulse was 120; the respirations about 36. On November 5th the exudate in the fauces was not diminished; there was continued epistaxis; the breath was still fetid; the glands in the neck were even larger; there were some purpuric spots on the face; the color was very pale; prostration was great; the temperature ranged from 100.6° to 102.6° ; the pulse was 140; the respirations, 28. At 1 P.M. of this day a dose of the stronger preparation of Aronson's antitoxin was injected by Dr. Louis Fischer, of New York. At 7 P.M. of the same day the condition of the patient was unchanged. For twenty-four hours after the first injection no other treatment was employed except the liberal use of milk and stimulants. Subsequently tincture of ferric chlorid and mercuric chlorid were given every two hours, and hydrogen dioxid applied locally every hour to the nares and fauces; strychnin sulphate, gr. $\frac{1}{100}$, was also given every six hours, continuing, of course, the free use of milk and whiskey.

On November 6th the exudate in the fauces was thinner, though still dark in color; blood was slowly dropping from the nose; the glands in the neck were somewhat diminished in size; the temperature, pulse, and respiration were unchanged. The pulse had considerable volume. Exhaustion had not increased, and the child took nourishment freely. On November 7th the exudate in fauces had increased since the previous day, and a few small purpuric spots remained on the face. Epistaxis had ceased, though the nose was somewhat moist from blood. A large ecchymosis on the thigh appeared where the first dose of antitoxin was injected, and the temperature was about the same, and the pulse was very weak indeed, just barely perceptible at the wrist, and could not be counted. The extremities were cold, the face pale and livid, and there was great drowsiness. The child was disinclined to take nourishment; there had been no bowel-movement for twenty-four hours. Tinct. ferri chloridi and hydrarg. chlor. corrosiv. were continued every two hours, and hydrogen dioxid was applied to the throat. Strych. sulph. gr., $\frac{1}{100}$, every four hours, and whiskey and milk were ordered at short intervals. At 12 midnight, $\frac{1}{8}$ gr. strychnin sulph. was given hypodermically.

On November 8th the exudate in the fauces had very much increased, covering not only the tonsils, uvula, and the anterior half-arches, but extending forward in

front of the uvula. The exudate in the nares was also increasing; the glands in the neck were sensitive but not swollen. The temperature ranged between 97.6° and 99.8° ; the pulse was just barely perceptible at the wrist; the heart's action was feeble, and the extremities were cold. In spite of this condition the child appeared bright and took milk fairly well. Strychnin sulph., gr. $\frac{1}{100}$, was ordered every three hours until two or three doses should be given.

At 5.20 A.M., 10 c.c. of Behring's antitoxin were injected. At 6.10 P.M., sulphuric ether, \mathfrak{M}_{XV} , was given hypodermically, also at midnight gr. $\frac{1}{100}$ strychnin sulph. hypodermically. On November 9th the exudate in the fauces was very much diminished; the heart's action was very weak, the pulse just perceptible at the wrist, but could not be counted. The temperature was about the same. The expression of the child was bright, but it took nourishment less willingly. There had been no bleeding from the nose for three days. Injections of strychnin were continued, gr. $\frac{1}{100}$ every four hours, and artificial heat was applied to extremities. At 2 P.M., 10 c.c. of Behring's antitoxin were again injected.

On November 10th there was still considerable exudate in the fauces and also in the nares; the heart's action was feeble, and the pulse at the wrist was still almost imperceptible; the extremities were cold, and the child took nourishment and stimulants somewhat reluctantly. Three hypodermic injections of strychnin sulph. $\frac{1}{100}$ of a grain, were made in the last twenty-four hours. The child's expression, when awake, was quite bright. The heart-sounds were growing less and less audible, and death occurred at 10 P.M. from asthenia.

CASE II.—E. G. T., aged two years and eight months, white, female, born in Philadelphia, was admitted to the hospital October 2d, having a well-marked exudate on both tonsils and in one of the nasal cavities of less than forty-eight hours' standing. At 6.10 P.M. on the day of admission 10 c.c. of Behring's antitoxin were injected. During the following twenty-four hours the temperature varied between 99° and 100.8° , being about the same as before the injection was administered; the pulse-rate was between 120 and 135; the respirations were from 20 to 30. The exudate on the tonsils seemed unchanged, as also did that in the nose, except that the discharge from the nares was slightly less. On November 4th the exudate in the fauces and nares had neither extended nor diminished; the temperature was unchanged; the pulse-rate and the respirations were about the same. On November 5th the exudate in the fauces and nares was unchanged, except that both nares were now involved; the glands in the neck were only very slightly swollen; the general condition of the child remained about the same as when the injection was given, though possibly there was slight improvement. The child received the same internal and local treatment as the previous case, and took nourishment freely.

On November 6th there was but little change in the exudate in the fauces; the temperature had risen to 101.6° , and the rash of scarlatina had appeared. A sister of this child had developed scarlet fever two days previously. On November 7th the exudate was diminishing both in the fauces and nares; the temperature ranged between 100.8° and 101.8° ; the pulse was 120. On November 8th the exudate in the fauces had disappeared;

in the nose it was dry and much less distinct; the temperature was 101°. On November 9th there was no exudate in the fauces, and very little in the nose. The rash of scarlet fever was just barely characteristic. The child's general condition was much improved, and she had quite recovered from the diphtheria. The attack of scarlatina was very mild.

On November 12th gradual improvement was noted, and there was no exudate in the fauces, but there was still a very little in one nasal cavity. The temperature was about normal, and, from the time the scarlet fever began, it had not been higher than 101.8°. The pulse was 120. Desquamation commenced on this date. The child took nourishment well.

CASE III.—A. J., thirteen years of age, colored, was admitted November 3d, having been ill four days. The exudate in the fauces covered the tonsils, the anterior half-arches, and the uvula completely. The temperature was 101.6°, the pulse 100, the respiration 28. There was only very slight enlargement of the glands of the neck. There was no nasal involvement. Tinct. ferri chloridi and hydrarg. chlor. corros. were given internally every two hours, and hydrogen dioxid was applied locally every two hours. On November 4th the condition of the fauces remained unchanged; the temperature was 99.2°, the pulse 86, the respiration 25. A 1 per cent. solution of formalin was applied to the throat every two hours alternately with the hydrogen dioxid. On November 5th the exudate in the fauces remained the same; there was no increase of swelling of the glands of the neck; the temperature was 99°, the pulse 88, the respiration 20. There was very little exhaustion, and the child took nourishment well. At 1.10 P.M. Dr. Fischer, of New York, injected 10 c.c. of Behring's antitoxin (a bacteriologic examination was made by Dr. Kyle, and typical bacilli were found). Following this the temperature ranged between 100° and 100.6°. On November 6th the exudate in the fauces continued much the same, though somewhat thinner on the uvula. The temperature ranged from 98.4° and 98.8° to 100.8°; the pulse was about 90, the respiration about 20. The same internal and local treatment was continued; the child took nourishment and stimulants freely. On November 7th the exudate in the fauces had greatly diminished; the temperature was 99.4°, the pulse ranged from 80 to 90, the respiration was 18; nourishment was taken as usual, and the patient slept well. On November 8th the exudate was diminishing rapidly, the swelling of the uvula was much less, and exhaustion was not great. On November 9th the exudate was much thinner and had disappeared in part, though considerable still remained. The same local and internal treatment was continued. The patient was now doing very well, and was placed on the regular house-diet.

On November 10th the general condition continued favorable; the fauces were quite free from exudate, but a little still remained on the uvula. Albumin continued in the urine in the same proportion.

On November 11th there was no exudate in the fauces except a little on the uvula; the temperature and pulse were about normal; the child took nourishment well, and strength was increasing. On November 12th there was a mere trace of exudation on the uvula; the temperature ranged between 98° and 100°; the pulse and

respiration were about normal. The child was anxious to sit up.

CASE IV.—B. M., white, male, aged five years, was admitted October 18th, on the third day of the disease. The exudate in the fauces was very great, covering the tonsils, the uvula, the anterior half-arches, and extending on the roof of the mouth in front of the uvula; there was also nasal involvement. The glands of the neck were enlarged. On October 19th the child was bleeding from the nose and mouth. On November 20th the exudate was unchanged, and there were croupy symptoms. On October 23d the general condition was about the same; the albumin on this date was about 60 per cent. of the bulk of the urine. The temperature had been running from 101° to 102°, the pulse from 100 to 118, the respiration from 22 to 26. On October 25th the exudate had diminished and epistaxis had ceased. The temperature was about 99°, the pulse 100, and the albumin was only 10 per cent by bulk. On October 30th the fauces were almost free from exudate; no albumin was found in the urine; the temperature was about normal, sometimes subnormal; the pulse ranged from 96 to 100. There were marked evidences of toxemia; there was great pallor and weak heart-action. On November 5th the temperature had been ranging from 100° to 102.6°; there was no albumin in the urine; the pulse was from 98 to 112. There was a mere trace of exudate in the fauces, and still some nasal involvement; the pallor and prostration continued; there was a feeble pulse, and the cervical glands were still enlarged. There was a herpetic eruption on the lips. At 1.30 P.M. Dr. Fischer, of New York, injected 10 c.c. of Behring's antitoxin, the Klebs-Loeffler bacteria having been found to be present by Dr. Kyle. On November 9th the patient was gradually improving; the temperature was from 98.6° to 100°; the pulse from 90 to 120; no exudate existed in the fauces, and that in the nares was gradually growing less; the color was also improving, and the child took nourishment well. The general condition was much improved.

On November 12th the fauces were entirely free from exudate, and only a very little remained in the nares; the temperature was 98.6°. No albumin had been found in the urine for several days past. The child was constantly improving.

CASE V.—A white male, eight years of age, was admitted November 9th, having been ill seven days. The exudate in the fauces covered the tonsils, the anterior half-arches, and the uvula, and extended a short distance on the roof of the mouth in front of the uvula; both nares were also involved. The breath was offensive; the glands on both sides of the neck were considerably enlarged, and the skin over the swollen glands was red. The temperature was 102.8°, the pulse 136, the respiration 36. Ten c.c. of Behring's antitoxin were injected under the skin on the back at 12 o'clock M. by Dr. Fischer, of New York. The patient was at this time taking internally about 6 minims tinct. ferri chlorid. and $\frac{1}{2}$ gr. of mercuric chlorid every two hours; locally, hydrogen dioxid undiluted, alternately with a one per cent. solution of formalin, was applied every hour, whiskey \mathfrak{z} ij every two hours, and milk *ad libitum*. On November 10th the temperature was 100°, the pulse 120, the respiration 32. The exudate in the fauces remained about the same, ex-

cept that it presented the appearance of peeling off in some places; in the nares the exudate was unchanged; the glandular swelling also remained about the same. The child at times was drowsy, and at other times restless.

On November 11th the exudate in the fauces and nares remained about the same; it was still dark in color, and the breath was offensive. The glandular swelling had not increased. The temperature was about 100° , the pulse 128, the respiration 32. Albumin was found in the urine in the proportion of about one-tenth part of the bulk of the urine. The child took nourishment well.

On November 12th there was very little, if any, change in the exudate in the fauces and nares; at times there was slight epistaxis. The temperature was 99.8° , the pulse 116, the respiration 26. There was no increase of the glandular enlargement; exhaustion was not great; and the child continued to take nourishment and to rest well.

I append the report kindly furnished by Dr. Kyle, of the bacteriologic investigation made by him.

BACTERIOLOGIC REPORT.

BY D. BRADEN KYLE, M.D.

IN the examination of the four cases of diphtheria injected with the antitoxin by Dr. Louis Fischer, of New York, the bacillus of diphtheria (the Klebs-Loeffler bacillus) was found in each case, the bacteriologic diagnosis agreeing with the clinical diagnosis, as made by Dr. Welch. One case was examined by Dr. W. M. L. Coplin, and the other three by myself. A complete bacteriologic report will appear in the January issue of the *American Journal of the Medical Sciences* in connection with an article to be contributed by Dr. Fischer.

It may be of interest to add a brief epitomization of the laboratory-technique of the preparation of the culture-medium, etc.

The bacillus of diphtheria grows best on blood-serum prepared after the method of Loeffler. A wide-mouthed jar, with a ground-glass stopper, which has been thoroughly sterilized, is taken to the slaughter-house and filled with freshly-shed blood of the ox or sheep, young animals being preferable. The skin of the neck of the animal to be killed is shaved, washed with soap and water and a brush, then with alcohol or ether, or a 1 to 1000 solution of mercuric chlorid may be used if the skin is again washed thoroughly with boiled water. One of the great vessels of the neck, preferably an artery, is then opened, and the blood is allowed to spurt directly into the prepared receptacle. The edge of the jar is then cleansed and the jar is sealed by means of the ground-glass stopper, and set aside until the blood has clotted firmly. The jar is then removed to the laboratory and placed in an ice-chest for twenty-four hours. It should be examined every few hours, and if the clot tends to adhere to the sides of the jar it should be loosened by means of a sterilized glass rod. While the serum is collecting test-tubes may be cleansed and sterilized. Two sizes of tubes are needed. A tube four inches long and two-thirds of an inch in diameter may be used for the serum, while a tube six inches long and three-quarters of an inch in diameter is used for the cotton swab. The tubes are carefully washed and

dried, then plugged with cotton so wrapped that its surface will be smooth, and when withdrawn from the test-tube will not spread out, but remain firm.

The tubes to be used for the swabs are prepared as follows: A stiff steel rod (an ordinary knitting-needle may be used) is passed through a plug of smaller diameter than the tube. The plug is wrapped so as to firmly hold the steel rod, which is passed through layers of cotton until the plug will tightly fit the caliber of the tube. The end of the rod which is placed in the tube is then wrapped with a small piece of cotton, which should be loose and fluffy at the end, but tightly adherent further up the rod. This arrangement can be effected by frilling the cotton and shortening the fine fibers well up on the rod and wrapping firmly toward the end. The swab is now introduced into the tube, which is placed in an incubator and exposed to dry heat at a temperature of 150° C. for at least one hour. This procedure should be repeated two hours before using the tube. The nutrient beef-broth which is mixed with the serum is prepared as follows: One pound of finely chopped lean beef is placed in one liter of water and allowed to stand for twelve hours in an ice-chest. After twelve hours the meat and water are placed in cheese-cloth or a towel and the fluid pressed out. The fluid thus obtained should be heated and again filtered through a towel, and the amount brought up to one liter by the addition of distilled water; to this is added 1 per cent. of peptone, 1 per cent. of glucose, and 0.5 per cent. of common salt. If the fluid has an acid reaction, a few drops of a saturated solution of sodium bicarbonate may be added. The mixture is then boiled for half an hour and filtered through absorbent cotton into sterilized flasks; then sterilized for half an hour. The blood-serum is now siphoned off through a sterilized glass tube and mixed with the nutrient beef-broth in the proportion of 3 to 1. The serum is poured into the sterilized test-tubes by means of a sterilized pipet, which should be inserted to the end of the test-tube so as to avoid the formation of air-bubbles and to secure a perfectly even surface. Two c.c. of the serum are sufficient for each tube. The tubes are now placed in an incubator and kept at a temperature just below the boiling-point, care being taken to have them inclined in order to obtain a wide surface for the growth of the inoculated germs. Great care must be taken that the serum does not boil.

If kept for several hours at a temperature just below the boiling-point, and if the process is repeated after twelve hours, the serum will remain sterile. The serum thus prepared is quite clear and firm. The tubes can be placed in glass jars, sealed by means of a clamp-top, and kept for months.

The swab for obtaining the membrane for inoculating the tubes is preferable to the inoculating-needle, as the infected areas can be quickly passed over, and the secretions are readily gathered in the meshes of the cotton. Besides, the operator is not exposed so long in front of the patient.

The serum-tube may be brought to the bedside and inoculated at once after the swabbing of the throat, or the swab can be returned to the sterile tube and taken to the laboratory, and the inoculation made there, and the serum-tube placed at once in the incubator.

A few words as to the method of obtaining the infec-

tive material from the throat and of inoculating the tubes may not be amiss. With the patient in a strong light, the operator puts one hand on the patient's head, while with the other he holds the tube containing the serum. An assistant depresses the tongue, and with the other hand holds the tube containing the swab. The operator removes the swab and rubs it firmly but gently against any visible membrane, either on the tonsils, pharynx, or uvula. The swab can now either be placed back in its tube, and the extending cotton singed and the whole be taken to the laboratory, or the serum-tube can be inoculated at once. After the swab has been used and the inoculation made the cotton should be burned, while the steel rod can be again sterilized and used. Should no false membrane be visible the swab should be passed over the reddened mucous membrane. Should false membrane be present in the nose, inoculations should be made from it also. Inoculations should not be made after the application of disinfectants to the throat.

After the inoculation has been made the serum-tubes are placed in the incubator and kept at a temperature of 37° C., the optimum temperature of the Klebs-Loeffler bacillus, for from ten to sixteen hours. On inspection the smooth surface of the serum will be dotted with minute colonies which are barely visible, but by slanting the tube and holding it so as to look along the level of the flat surface small pin-point projections can be seen. Spreads and stains should be made at once. Care must be taken not to spread the material too thickly on the cover-glass. This can be avoided by first placing a tiny drop of sterilized water on the cover-glass. The platinum needle is then introduced into the tube and swept over the colonies, and the bacteria adherent to the needle are washed off in the drop of water previously placed on the cover-glass and evenly distributed over the entire surface.

The spread is then allowed to dry in the air, and before being placed in the stain is fixed by being passed quickly through the flame of an alcohol lamp. The best stain is Loeffler's alkaline methylene-blue. The cover-glass is left in this stain without heating for from ten to fifteen minutes; it is then rinsed with clear water, dried, and mounted in Canada balsam. The microscopic examination by means of the one-twelfth oil immersion will disclose what at first appears to be a mixed culture. The bacillus of diphtheria assumes many shapes and forms, yet the refractive bodies and the rounded ends are characteristic.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Pediatrics.

STATED MEETING, NOV. 8, 1894.

JOSEPH E. WITTERS, M.D., *Chairman.*

DR. A. CAMPBELL WHITE read a paper entitled "Antitoxin Treatment of Diphtheria, Based upon a Series of Cases Treated at the Willard Parker Hospital." He said that many efforts had been made to confer immunity from infectious diseases ever since Jenner demonstrated that this could be done in the case of smallpox. There was, however, some danger in inoculating

persons with attenuated bacilli, and for this reason certain investigators had been following a somewhat different line of research. They had found that by first rendering an animal immune, and then injecting the serum of this animal into a human being, the latter could also be made immune to that particular disease, without the danger attending the other method. By this plan of treatment, the person so treated was not only spared a severe illness following the inoculation, but by properly regulating the dose of the serum given the treatment could be adapted to an infection of greater or less severity. These facts are the foundation of the new antitoxin-treatment of diphtheria. Behring has found that not only is an individual rendered immune by an injection of diphtheria-antitoxin, but if the diphtheria has already developed its course will be promptly checked. The serum is obtained from the larger animals, particularly the horse, and the injections necessary to immunize the animal may have to be continued for several months. The only reaction following the injection of this serum into the human subject is that which may be attributed to the introduction into the system of the serum from the lower animals. The strength of each sample of serum is determined by noting its effect in certain quantities on guinea-pigs of a given weight.

In the Willard Parker Hospital the mortality among adults suffering from diphtheria has been less than 3 per cent.; for children between the ages of five and sixteen years, 13.6 per cent.; and for children under five years, 42.7 per cent. Patients dying of diphtheria from the intoxication of the disease, from extension of the membrane, or from heart-failure, do so usually within the first ten days; those dying later than this, usually succumb to pneumonia or paralysis. Among one-hundred-and-seventy fatal cases observed in the hospital during the past year, one-hundred-and-thirty-five deaths occurred within five days after admission; seventeen within ten days, and eighteen after this time. Of these eighteen, nine died of heart-failure, two of septic infection, one of meningitis, and six of pneumonia. The practice had been to keep all diphtheria-patients in a warm room, in the recumbent position, and on a fluid diet; the nose and throat were irrigated with normal salt-solution, and internally large doses of iron were given and stimulants as indicated. In the laryngeal cases the main dependence had been placed on sublimations of calomel and the use of moist heat.

Recently twenty especially severe cases of diphtheria were selected for the antitoxin treatment, no other treatment being employed with the exception of a single irrigation of the nose and throat with the salt-solution just after admission to the hospital. The average age of the patients had been three-and-a-half years, and the average dose of the antitoxin, 11.3 cm. Fourteen in this series had also laryngeal diphtheria; four of these were intubated, and one tracheotomized. One intubation-case, in a child of three years, died on the twenty-fourth day of lobar pneumonia. The tracheotomy-case unexpectedly developed a broncho-pneumonia from exposure to cold, on the thirty-fourth day. Of the six cases in which there was no laryngeal complication, only one died, and that was a child that was apparently well and on the road to convalescence from the diphtheria when it developed scarlatina. In these latter

cases, then, the mortality was 16.6 per cent., while in the laryngeal cases, instead of the usual mortality-rate of 50 per cent. or over, it was 28.5 per cent. The injections of the antitoxin caused no local irritation or reaction of any kind, with the exception of an occasional slight eruption. The temperature was not markedly affected, but the pulse was decidedly improved after the first few hours. The antitoxin treatment did not hasten the disappearance of the diphtheria-bacilli, and it did not markedly hasten the disappearance of the membrane.

Twelve other cases, all under five years of age, were treated with the weaker "immunization-solution" of Aronson, and among these the mortality was 25 per cent.

Statistics compiled from various sources show that out of a total of 486 children, 116 died, or a mortality of 23.8 per cent. in a class of cases in which before the introduction of the antitoxin-treatment the mortality had been 60 per cent.

In conclusion the author expressed the opinion that in addition to conferring immunity from diphtheria for a certain length of time, the antitoxin was a specific for this disease, and was capable of averting death from absorption of its toxins.

DR. HERMAN M. BIGGS said that during the past summer he had had exceptional opportunities in Berlin for studying this new treatment of diphtheria. It should be remembered that this was not a recent discovery, but the result of years of scientific research. He had been particularly struck with the fact that all of the eminent bacteriologists connected with the Institute for Infectious Diseases in Berlin, after carefully following 500 cases treated with the antitoxin, were unanimous in expressing the opinion that this treatment has already passed beyond the experimental stage. Bacteriology has shown that the constitutional disturbances exhibited in the various contagious diseases are due to bacterial products, and it has been demonstrated by experiment that immunity can be produced artificially by inoculation with these chemic products of the microorganisms. It has also been demonstrated that this immunity is the result of the development of something that neutralizes the chemic products of the bacteria. The strength of these products in diphtheria can be measured biologically by their effect on animals. An antitoxin may be developed in the circulation by inoculation with these chemic products of the microorganisms, and the amount of the antitoxin can be very greatly increased by gradually increasing the quantity of the toxin injected. Clinical experience has shown that the dose of the antitoxin-solution must be adjusted to the age and weight of the patient as well as to the severity of the infection.

DR. WILLIAM HALLOCK PARK said that it had been shown by experiment that after the antitoxin had been injected and the power of the toxin neutralized, both the antitoxin and the toxin were still present. If the inoculation of the trachea of an animal with diphtheria be immediately followed by an injection of the antitoxin-solution, the development of the characteristics of diphtheria will be prevented, but if the injection of the antitoxin were delayed somewhat longer, a larger quantity would have to be employed in order to prevent the development of the diphtheria. It does not, however, affect the diphtheria-bacilli: they may be grown on cultures that have been impregnated with the antitoxin.

Dr. Park has been able to collect 1180 cases of diphtheria treated by the antitoxin with a mortality of only 20 per cent.

DR. GEORGE F. SHRADY said he could recall the time when diphtheria was a new disease in New York City, and when the mortality was as high as 90 per cent. He had followed the cases undergoing the antitoxin-treatment in the Willard Parker Hospital, and he could heartily indorse the method.

DR. W. P. NORTHRUP said that it should be remembered that there had been no severe epidemic of diphtheria in New York City since the beginning of last July, and that on this account deductions from the few cases so far reported should be made with great caution. He thought the treatment was likely to render the greatest service in fulminating cases that occasionally occur.

DR. LOUIS FISCHER said that he had spent the whole summer with Professor Baginsky studying this treatment. The practice in Berlin had been to employ the injections in every case proved by bacteriologic examination to be true diphtheria. In his own cases he had not usually observed any change in the local or general condition until about forty-eight hours after the injection of the antitoxin.

DR. H. W. BERG remarked that the difficulty in estimating the true value of this treatment lay in the fact that we had no way of determining at the outset whether or not a given case of diphtheria was specially severe.

DR. J. LEWIS SMITH said he would like to know if the antitoxin-treatment had any beneficial effect on pseudo-diphtheria.

The Chairman replied that Aronson had stated that it had no favorable influence on cases of mixed infection. The ordinary mortality-rate of diphtheria in New York City was not much over 25 per cent. The very fact that most of the recent cases of diphtheria had been very mild, so that many recovered without any treatment, should make us especially cautious about drawing any positive conclusions from the cases presented. This could only be done after the treatment had been on trial for a long time and in the hands of many physicians.

DR. WHITE, in closing the discussion, said that a sufficient guarantee of the severity of the cases that he had submitted to the antitoxin-treatment was to be found in the fact that in fourteen of the twenty cases the disease involved the larynx, and that the patients, with one exception, were all under five years of age. The ordinary mortality in our hospitals in this class of cases was 40 or 50 per cent., and this had been reduced to 25 per cent. in the cases treated with the antitoxin.

NEWS ITEMS.

Special Course in Bacteriology.—A course of ten lectures on bacteria, by Dr. M. V. Ball, at the Academy of Natural Sciences, Nineteenth and Race Streets, on Fridays at 3 P.M., was begun on November 9th. Medical students and others interested are invited to attend.

Muscular Anomalies and Squint.—A series of lectures and demonstrations, together with clinical work, will constitute a special course upon muscular anomalies and

squint, to be given at the Philadelphia Polyclinic during the week commencing November 19, 1894.

The Value of State Medical Examinations.—At the September examinations for State medical license by the board representing the Medical Society of the State of New York, the number of candidates was seventy-six, of whom fifty-one were successful and twenty-five unsuccessful.

The Statue of Dr. J. Marion Sims.—By an error it was stated in THE NEWS of November 3 that the unveiling of the statue to Dr. Sims took place at Brooklyn instead of at Bryant Park, New York City. It was also said that the statue was the first of a physician erected, while the statement intended was that it was the first statue of a physician erected in this country.

Meetings of Philadelphia Medical Societies:

	Meets.	Next meeting.
Academy of Surgery,	1st Monday of month, Oct.—June.	Dec. 3
College of Physicians,	1st Wednesday of month, Sept.—June.	Dec. 5
Section of Ophthalmology,	3d Tuesday of month, Sept.—May.	Nov. 20
Section of Orthopedic Surgery,	3d Friday of month, Oct.—April.	Dec. 21
Section of Otolaryngology,	1st Tuesday of month, Oct.—May.	Dec. 4
Section of Surgery,	2d Friday of month, Oct.—May.	Dec. 14
County Medical Society,	2d and 4th Wednesdays of month, Sept.—June.	Nov. 28
Neurological Society,	4th Monday of month, Oct.—April.	Nov. 26
Obstetrical Society,	1st Thursday of month, Sept.—June.	Dec. 6
Pathological Society,	2d and 4th Thursdays of month, Sept.—June.	Nov. 22

BOOKS AND PAMPHLETS RECEIVED.

Puerperal Hysteria (Insanity?). By W. P. Manton, M.D. Reprinted from the Journal of the American Medical Association, 1892.

A Contribution to the Surgical Pathology of the Gall-Bladder and Ducts. By Walter P. Manton, M.D. Reprinted from the American Gynecological Journal, 1893.

State Care for Epileptics. By J. B. Maxwell, M.D. Reprinted from the North American Practitioner, 1893.

Neurasthenia, Neurasthenia, and Neurasthenia. By C. H. Hughes, M.D. Reprinted from the Alienist and Neurologist, 1894.

Buffalo Academy of Medicine. Section on General Medicine. Report of the Committee on Tuberculosis. Reprinted from the Buffalo Medical and Surgical Journal, 1894.

Two Cases of Brain-Tumor. By Clarence Bartlett, M.D., and W. B. Van Lennep, A.M., M.D. Reprinted from the Hahnemannian Monthly, 1894.

Before the Committee on Interstate and Foreign Commerce of the House of Representatives in the Matter of Establishing a Bureau of Public Health in the Department of the Interior. Address of the Supervising Surgeon-General, U. S. Marine-Hospital Service, May 18, 1894. Washington: Government Printing Office, 1894.

Enormous Oval Hemorrhoid Encircling the Anus; Whitehead's Operation; Entire Cure. By W. W. Keen, M.D. Reprinted from the Therapeutic Gazette, 1894.

Operation Wounds of the Thoracic Duct in the Neck: with a

Résumé of the Two Prior Recorded Cases and Two Additional Cases. By W. W. Keen, M.D. Pamphlet. Philadelphia, 1894.

Removal of the Gasserian Ganglion as the Last of Fourteen Operations in Thirteen Years for Tic Douloureux. By W. W. Keen, M.D., and John K. Mitchell, M.D. Reprinted from the Transactions of the Philadelphia County Medical Society, 1894.

Ligation of the Common and External Carotid Arteries and the Jugular Vein for Arterio-venous Aneurism of the Internal Carotid and Jugular, with Division of the Optic Nerve on the Opposite Side, the Result of a Gunshot Wound. By W. W. Keen, M.D. Pamphlet. Philadelphia, 1894.

Wisconsin College of Physicians and Surgeons, Milwaukee, Wis. Circular of Information for 1894-95.

Transactions of the Indiana State Medical Society, 1893, Forty-fourth Annual Session. Indianapolis: Wm. B. Burford, Printer, 1893.

A Clinical Investigation to Determine the Value of Corrosive Sublimate and the Gray Oil Administered Hypodermatically in the Treatment of Syphilis. By Orville Horwitz, B.S., M.D. Reprinted from the Therapeutic Gazette, 1894.

Non Nocere. By A. Jacobi, M.D. Reprinted from the Medical Record, 1894.

Relation of the Kindergarten to the Public School. By E. Stuver, M.Sc., M.D. Pamphlet. Rawlins, Wyo., 1894.

Differential Diagnosis of Nephritis. By Emmet L. Smith, M.D. Reprinted from the Medical Century, 1894.

The Result of a Pretended Operation upon a Patient Suffering from a Delusion of a Sexual Character, Operation for the Cure of Epispadias; Case of Perineal Section for Traumatic Stricture, with a Description of a New Form of a Perineal Staff; New Method of Treating a Resilient and Nodular Stricture of the Penile Portion of the Urethra. By Orville Horwitz, B.S., M.D. Reprinted from International Clinics, vol. i, fourth series.

Sur la Cure Radicale des Hernies, Série Nouvelle de 116 Cas Complétant un Total de 391 Cas. Par le Dr. Just Lucas Championnière. Extrait du Journal de Médecine et de Chirurgie Pratiques, 1893.

Functional Constipation. By W. Blair Stewart, A.M., M.D. Reprinted from the New England Medical Monthly, 1894.

Union Mission Hospital Reports. Philadelphia, May, 1894.

A Suggestion of an Operation to Correct Astigmatism. By W. H. Bates, M.D. Reprinted from the Archives of Ophthalmology, 1894.

Macrobiotic, or Our Diseases and Our Remedies. By Julius Hensel. Translated by Prof. Louis H. Tafel. From the second revised German edition. Philadelphia: Published by Boericke & Tafel.

The Sympathetic Nervous System. By W. Metcalf, M.D. Reprinted from the Physician and Surgeon, 1894.

Chaucer's "Doctour of Physick." Reprinted from the Bristol Medico-Chirurgical Journal, 1894.

Annual Reports of the Managers and Officers of the New Jersey State Hospitals for the Year ending October 31, 1893. Trenton, N. J.: The John L. Murphy Printing Co., Printers, 1893.

On Double Consciousness. By Alfred Binet. The Religious Science Library. Chicago: The Open Court Publishing Co., 1894.

Apex Catarrh. By Howard S. Straight, A.M., M.D. Reprinted from the Medical Record, 1894.

An Act to Regulate the Practice of Medicine, and to Create a State Board of Examiners in Louisiana. Monroe: The Monroe Bulletin Print, 1894.

Efficient Spinal Support in Pott's Disease, and a New Method for Locating the Bullet in Gunshot Fractures of the Skull. By W. V. Morgan, M.D. Reprinted from the Indiana Medical Journal, 1894.

The Colorado School of Medicine. Medical Department of the University of Colorado, Boulder, 1894-95. Denver, Col.: News Printing Co., 1894.

Index-Catalogue of the Library of the Surgeon-General's Office, U. S. Army. Authors and Subjects. Vol. xv, Universidad-Vzoroff. Washington: Government Printing Office, 1894.